

# 2014 RELEASED TEST ALIGNED TO THE STANDARDS



# Released Tests User Guide IQ Analysis | Investigating the Question

All questions for a Student Expectation clustered together

Concept

DISCUSS: How many questions were asked for this SE over the past two years?

Student Expectation and Reporting Category

Student Expectation description.

DISCUSS: Which parts of the student expectations (SE) have been tested?

IQ Analysis   Investigating the Question			SE#		RC#	
SE# Student Expectation			Units:			K
SE#		Analysis	of Assess	ed Stand	dards	
Year of test and			Content			
[Year] [Question #] Year of test and question number	Dual C	Dual Coding				1/
	PLC f	PLC for PLC				7
	Ana	lysis	Thinking			
	Related	d SEs				
			Data And	alysis		
	SE Lev	el Data		State	Local	7
	Item	State	Local	Error Ty	'ne	1/
Item	A/F			Proce		1
	B/G			□Applic	ation	
	C/H			Conce		
	D/J			□Guess	sing	
		Ins	tructional	Analysis	•	
	Eviden Transfe				es (taught) tion (learned)	
	Depth (		Level 2		Level 3 Level 4	1
* Correct answer	0	-4	1			1

So What? Wh	Vhat are the major issues?
NOW Whats	ow do adapt instruction? Select materials? Structure intervention? Vhat do we formatively assess?

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COMPLETE: List units in the district curriculum in which this SE is included.

TO DO: Review Items prior to that unit.

Dual coding and standard type assessed

COMPLETE: Stimulus (if any)

DISCUSS and NOTE: Level of thinking required (refer to content or process standard). Note any associated SEs also assessed by the item.

State level SE data and item analysis

COMPLETE: Local data for SE and item analysis

DISCUSS and NOTE: Error pattern (highly selected or evenly distributed) and error type(s) - see below

### DISCUSS and NOTE:

- Was the item similar to one used in instruction or one which required the student to transfer learning?
- What is the level of the question using Depth of Knowledge or other taxonomy? – see below
- What concepts were assessed in the question? (refer to district curriculum or other support materials)

### Error Type

A highly chosen incorrect response indicates students may have made one or more of these error types:

- Procedural Errors Students cannot complete content specific procedures accurately. Make lowlevel mistake/careless error.
- Application Errors Students cannot transfer learning between contexts (item doesn't look like samples used in class) or stop too early in problem solving.
- Conceptual Errors Students have misunderstanding about the underlying concepts. Mix up concepts.

Evenly distributed incorrect responses suggests **Guessing Error** 

SE A.1A

**RC:** 1

### **A.1A** describe independent and dependent quantities in functional relationships

<b>A.1</b>	Α			Analysi	s of Asses	sed Sta	ndar	ds
			Dual C	مطانمه	Content	Support	ing	
201	14 – Q4		Dual C	oaing	Process			
4	A teacher will	determine the total number of books to order for a class using the function			Stimulus			
	b(n) = 4n, wh	ere <i>n</i> represents the number of students in the class. What is the independent		or PLC lysis				
	quantity in thi	s situation?			Thinking			
	F The number	er of students in the class	Relate	d SEs				
	<b>G</b> The total r	umber of books to order			Data An	alysis State		Local
	H The number	er of books each student needs	SE Lev	el Data		State	-	Local
	J Not here		Item	State	Local			
	J Not here		A/F*			Error T		
			B/G				cation	
			C/H			□Conc □Gues		İ
			D/J					
					structiona			
			Eviden Transf			r to exam res applic		
			D 41.	- <b>.</b>	<u></u>			
			Depth Knowle		Level		☐ Le	
* Co	orrect answer	pt						
A.1	A			Analysi	s of Asses	sed Sta	ndar	ds
				Content	Support	ing		
201	13 – Q35		Dual Coding		Process			
	A print shop ch	arges a fixed amount per photocopy and gives a 10% discount off the total	PLC for PLC		Stimulus			
	cost of the pho	tocopies. The total cost is a function of the number of photocopies made. What ent quantity in this situation?	Analysis		Thinking			
		st of the photocopies	Relate	d SEs				
	B The price pe				Data An	alysis		
		of the discount	SELev	el Data		State	;	Local
	D The total nu	mber of photocopies made	Item A/F	State	Local	Error T	уре	
			B/G			□Proce	edural cation	
			C/H			☐Conc	eptua	i
			*D/J			□Gues	sing	
				Ins	structiona	l Analys	is	
			Eviden Transf			r to exam		
			Depth Knowle		Level	1 2	Le	vel 3
* Cc	orrect answer	(D)	Conce					, oi 4
			Conce	μι				
S	so What?							
No	ow What?							

**A.1B** gather and record data and use data sets to determine functional relationships between quantities

A.1B				Analysis of Assessed Standards				
			Dual Coding		Content	Content Supporting		
2014 – Q	19				Process			
19	Wh	ich set of ordered pairs represents $y$ as a function of $x$ ?		or PLC	Stimulus			
		(() () ()	Ana	Analysis				
	Α	$\{(-9, 2), (0, 6), (1, -2), (-3, 6)\}$	Relate	d SEs				
	В	((-1.0) (4.2) (-7.2) (-1.0)	D		Data Analysis			
	В	$\{(-1, 0), (4, 3), (-7, -3), (-1, -8)\}$	SE Level Data		State		Local	
	С	$\{(3, 2), (-4, -2), (3, 1), (-4, 1)\}$	Item State		Local	Error T	Error Type	
			*A/F	*A/F		Proce		
	D	{(5, 4), (2, 3), (1, 1), (2, 4)}	B/G			Applic		
			C/H			☐Conce		
			D/J				5ii ig	
				ln:	structiona	l Analys	is	
			Eviden Transf				ples (taught) ation (learned)	
* 0 1		(4)	Depth Knowle		Level		Level 3 Level 4	
* Correct a	nsw	er (A)	Conce	pt				

A.1B		4	Analysis	s of Asses	sed Stanc	lards .
0040 000				Content	Supporting	g
2013 – Q32		Stimule		Process		
Which graph does not represent $\boldsymbol{y}$ as a function	of x?	PLC for	r PLC	Stimulus		
y	y	Analysis		Thinking		
<u>†</u>	Į.	Related	SEs			
	<b>\</b>			Data An	alysis	
F +	H				State	Local
<b>7</b>		SE Level Data				
	D	Item	State	Local	Error Typ	-
↓	M	A/F			Procedi	
		B/G			Applica	
y A	X A	C/H*			Concep	tual
	$\int \mathcal{J}$	D/J			□Guessir	ng
4			Ins	tructiona	l Analysis	
G ************************************	J →×	Evidend Transfe			r to example res applicati	es (taught) ion (learned)
<b>↓</b>	<b>↓</b>	Depth o		Level		Level 3 Level 4
* Correct answer (H)		Concep	t			

So What?	
Now What?	

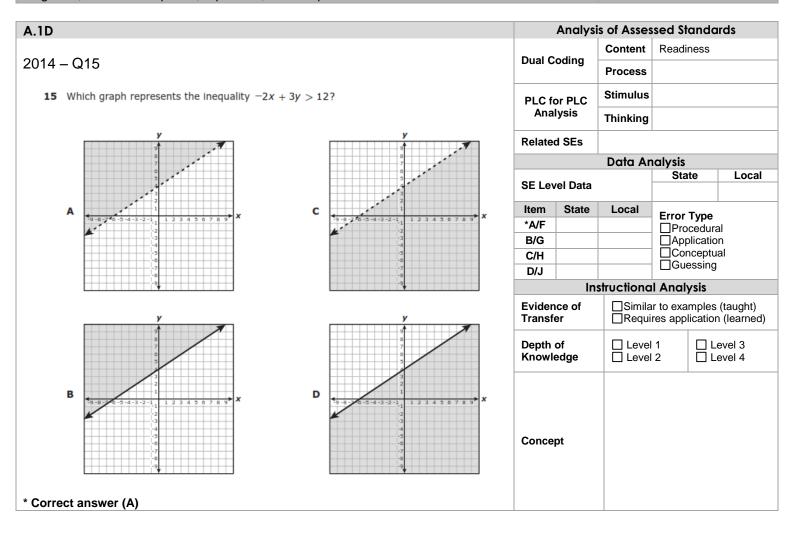
**A.1C** describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations

A.1C	-	Analysis	of Asses	sed Stand	ards
	Dual Coding		Content	Supporting	
2014 – Q44	Dual Coding Proc		Process		
44 The volume of two identical cubes is related to the edge length of the cubes.	PLC for		Stimulus		
	Analysis		Thinking		
	Related	SEs			
			Data An	alysis	
	0=1			State	Local
	SE Level Data				
	Item	State	Local	Error Time	
	A/F*			Error Type	
	B/G			Applicati	ion
Which function represents the combined volume of these cubes?	C/H			Concept	
	D/J			☐Guessin	g
$\mathbf{F}  y = 2x^3$		Ins	tructiona	l Analysis	
<b>G</b> $y = x^3$	Evidend Transfe			r to example res application	es (taught) on (learned)
$\mathbf{H}  y = 8x^3$	Depth o		Level		Level 3 Level 4
$\mathbf{J}  y = 2x^2$			_		
* Correct answer (F)	Concep	t			

A.1C		Analysi	s of Asses	sed Standa	rds	
2042			Content	ontent Supporting		
2013 – Q4	Duai	Dual Coding				
A family will travel 350 miles from their house in order to reach Dallas, TX. Which inequality can be used to find all possible values of $t$ , the time it will take this family to reach Dallas in		or PLC	Stimulus			
hours, if they travel at an average speed of at least $r$ miles per hour?	Ana	lysis	Thinking			
<b>F</b> $t \le 350r$	Relate	Related SEs				
				Data Analysis		
<b>G</b> $t > \frac{r}{350}$	05.1	SE Level Data		State	Local	
350	SE Lev					
350	Item	State	Local	Error Type		
$\mathbf{H}  t \leq \frac{350}{r}$	A/F			□Procedura	al	
	B/G			Applicatio		
<b>J</b> $t > 350r^2$	C/H*			☐Conceptu ☐Guessing		
	D/J			Guessing		
		ln:	structiona	l Analysis		
	Evider Transf			r to examples res applicatior		
	Depth Knowl		Level	_	evel 3 evel 4	
* Correct answer (H)	Concept					

So What?	
Now What?	

**A.1D** represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities



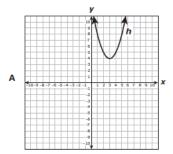
So What?	
Now What?	

A.1D											Analysi	s of Asses	sed Stand	ards
2014 –	O28									Dual C	oding	Content	Readiness	
2011	Q20											Process		
28 The by p	<b>28</b> The number of possible pairings of 2 objects selected from a set of $x$ objects can be modeled by $p(x) = 0.5x(x-1)$ . Which table shows this quadratic relationship?								nodeled		or PLC Iysis	Stimulus		
,										Ana	iysis	Thinking		
		Objects					Obj	ects		Relate	d SEs			
	Number (		ossible	1			ımber of	Possible	l			Data An	alysis State	Local
_	Objects,	x Pairi	$\log s, p(x)$			_	ojects, x	Pairings, $p(x)$		SE Lev	el Data		State	LUCAI
F	2 4	+	6	-	Н	' <del> </del>	3	3		Item	State	Local	Error Type	
	9	+	28	1		$\vdash$	7	22		A/F B/G*			□Procedu	ral
	13		78	]			13	78	1	C/H			☐Applicati ☐Concept	ual
										D/J			□Guessin	g 
		Objects		,				ects					l Analysis	
	Number of Objects,		ossible ings, $p(x)$				imber of bjects, <i>x</i>	Possible Pairings, $p(x)$		Evider Transf			r to example res applicatio	
G	2	$\perp$	1	]	J		2	1		Depth		Level		Level 3
	5 8	+	10 28	-		$\vdash$	10	6 44		Knowl	edge	Level	2	Level 4
	12	+	66	1		$\vdash$	12	66						
				•					•	Conce	pt			
* Correc	t answer (	G)												
											A 1			•
A.1D											Anaiysi	s of Asses Content	Readiness	aras
2013 –	Q8									Dual C	oding	Process	rteauness	
								2				Stimulus		
	Wh	ich table	shows t	he same	e relation	iship as	s y = -x	<sup>2</sup> + 3x?		_	or PLC Iysis			
												Thinking		
	F	X	-2	-1	0	1	2			Relate	d SEs	Darker Am	alvaia	
		y	-2	-2	0	4	10					Data An	State	Local
										SE Lev	/el Data			
		x	-2	-1	0	1	2			Item A/F	State	Local	Error Type	
	G	v	-2	-1	0	1	2			B/G			☐Procedu ☐Applicati	
		,	-				-			C/H*			☐Concept ☐Guessin	ual
										D/J	lm			9
		x	-2	-1	0	1	2			Evider			I Analysis r to example	s (taught)
	Н	y	-10	-4	0	2	2			Transf			res applicatio	
										Depth Knowl		Level	1	Level 3 Level 4
	J	x	-2	-1	0	1	2							
	,	y	-10	-4	0	4	10			Conce	nt			
* Correc	t answer (	н)								Conce	ρι			
227.30		•								1		'		
So W	hat?													
Now V	Vhat?													

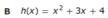
# A.1D

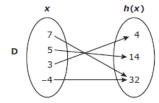
### 2013 - Q25

The graph of the quadratic function h passes through the points (-4, 32), (3, 4), (5, 14), and (7, 32). Which of the following shows the same relationship as h?



	x	h(x)
	32	-4
С	4	3
	14	5
	32	7





Analysis of Assessed Standards						
Dual Coding	Content	Readiness				
Dual Coding	Process					
PLC for PLC	Stimulus					
Analysis	Thinking					
Related SEs						

Related SEs

Concept

Concept

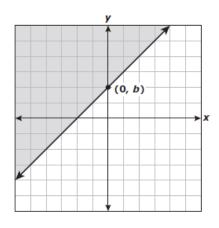
Data Analysis							
SELO	el Data		Sta	te	Local		
SE Lev	OL Level Data						
Item	State	Local	Error	Type			
A/F				cedura	al		
B/G			☐ Application ☐ Conceptual				
C/H							
*D/J			Guessing				
	In	structiona	l Anal	ysis			
Eviden	ce of	□Simila	imilar to examples (taught)				
Transf	er	□Requi	☐Requires application (learned)				
Depth	of	☐ Level 1 ☐ Level 3					
Knowledge					evel 4		

### \* Correct answer (D)

# **A.1D** 2013 – Q50

·

Which inequality can be represented by the graph below?



F	y	$\geq$	Х	+	b
---	---	--------	---	---	---

**G** 
$$x-y \ge -b$$

**H** 
$$x + y \le b$$

$$\mathbf{J} \quad -y \leq x + b$$

\* Correct answer (F)

Dual C	oding	Process						
PLC fo	PLC for PLC							
Anal	lysis	Thinking						
Related	d SEs							
		Data An	alysis					
			Sta	te	Local			
SE Lev	el Data							
Item	State	Local	Error	Tyne				
A/F*				cedura	al			
B/G			Application					
C/H			Conceptual					
D/J			☐Guessing					
	Ins	tructiona	tional Analysis					
Eviden Transfe	•••	_	ar to examples (taught) uires application (learned)					
Depth Knowle		=	☐ Level 1 ☐ Level 3 ☐ Level 4					

**Analysis of Assessed Standards** 

Content Readiness

So What?	
Now What?	

SE A.1E

**RC: 1** 

**A.1E** interpret and make decisions, predictions, and critical judgments from functional relationships

<b>A</b> .1	Е			Analysi	s of Asses	sed Sta	ndard	ls
					Content	ontent Readiness		
201	14 -	- Q9	Dual C	Dual Coding				
9		ne type of redwood tree has an average height of 65 feet when it is 20 years old. If the	PLC fo	PLC for PLC				
	tree is more than 20 years old, the average height, $h$ , can be modeled by the function $h = 1.95(a - 20) + 65$ , where $a$ is the age of the tree in years. Which statement about this		Ana	Analysis				
	sit	uation is true?	Relate	Related SEs				
	Α	Every additional 1.95 ft of length over 20 ft adds 45 years to the age of this type of			Data An	alysis		
		redwood tree.				State	9	Local
	В	<b>B</b> For this type of redwood tree, the average height increases by 1.95 ft per year		vei Data				
		throughout its lifetime.	Item State		Local			
	С	Each additional year of age over 20 years adds 1.95 ft to the average height of this	A/F			Error Type  ☐ Procedural ☐ Application		
		type of redwood tree.	B/G					
	ь	For this type of redwood tree, the average height increases by 65 ft for every 20 years	*C/H			Conc		
	_	of growth.	D/J			□Gues	ssing	
			Instructional Analysis					
			Evider Transf			r to exam res applic		
			Depth Knowl		Level		☐ Lev ☐ Lev	
* Co	orre	ct answer (C)	Conce	pt				

So What?	
Now What?	



A.1E	Anal	sis of Asses	sed Stando	ırds
	Duel Ce II	Content	Readiness	
2014 – Q35	Dual Coding	Process		
35 The graph shows the cost of purchasing x small flags at a gift shop if the flags are equally priced.	PLC for PLC	Stimulus		
Gift Shop	Analysis	Thinking		
19	Related SEs			
18		Data Ar		
17	SE Level Dat	_	State	Local
16	SL Level Dat	a 		
15	Item Stat	Local	Error Type	
13	A/F		□Procedur	al
O St (12   11   10   10   10   10   10   10	B/G		Application	
	C/H		☐Conceptu ☐Guessing	ıaı
0 10	*D/J			'
8 8		nstruction		
7 6	Evidence of Transfer		r to examples res application	
5 4 3 2	Depth of Knowledge	☐ Leve	1	evel 3 evel 4
1				
Based on this information, which ordered pair represents an additional point on the graph?				
<b>A</b> (5, 19)	Concept			
<b>B</b> (8, 34)				
<b>C</b> (6, 24)				
<b>D</b> (7, 29)				
* Correct answer (D)				

So What?	
Now What?	

A 15				A sa asla cas	f A	d Claus	al aural a	
A.1E				Anaiysi		essed Standards		
			Dural	Cadina	Content	Readines	S	
2014 – Q54			Duai	Dual Coding Process				
<b>54</b> The table shows the population	on, $p$ , of mice in	a field at the end	PLC	for PLC	Stimulus			
_	Mouse Po	opulation	Ar	alysis	Thinking			
	Time, <i>m</i> (months)	Population, p	Relat	ed SEs				
F	0	6			Data An	nalysis		
F	1	12	SEI	evel Data		State	Local	
-	2	24	3E L	evei Dala				
-	3	48	Item	State	Local	Error Typ	ne	
-	4	96	A/F			☐Procedural ☐Application ☐Conceptual ☐Guessing		
L	4	90	B/G					
Based on the data in the table	e, what will be t	the population of						
8 months?			D/J					
<b>F</b> 192				ln:	structiona	l Analysis		
<b>G</b> 3,072							ar to examples (taught)	
<b>H</b> 1,536			Irans	Transfer		ires application (learned)		
•			Dept	Depth of		1	Level 3	
<b>J</b> 256			Knov	Knowledge		2	Level 4	
* Correct answer (H) Concept				·				
A.1E				Analysi	s of Asses	sed Stan	dards	

A.1E	Analysis of Assessed Standards				dards
	Dual Coding		Content	ntent Readiness	
2013 – Q18		Dual Coding			
The population of a town is currently 9,000. The function $p = 9,000 + 8t^2$ can be used to estimate $p$ , the population of the town $t$ years from now. Based on this function, which			r PLC Stimulus		
statement is true?	Analy	ysis	Thinking		
<b>F</b> The population of the town is increasing at a constant rate.	Related	SEs			
<b>G</b> The population of the town will reach 10,000 between 11 and 12 years from now.			Data An	alysis	
The population of the town will reach 10,000 between 11 and 12 years from how.	SE Level Data			State	Local
<b>H</b> The population of the town will increase by 256 people two years from now.	SE Leve	ei Data			
J The population of the town will increase and then decrease.	Item	State	Local	Error Typ	oe .
	A/F			□Proced	
	B/G*			Applica	
	C/H			☐Conce	
	D/J				
	Instructional Analysis			\$	
	Evidend Transfe				les (taught) tion (learned)
	Depth o		Level	·	Level 3 Level 4
* Correct answer (G)	Concep	t		·	

So What?	
Now What?	



### **Analysis of Assessed Standards A.1E** Content Readiness **Dual Coding** 2013 - Q42 **Process** The dishwasher at a restaurant is loaded with the same number of dishes every time it is **Stimulus** PLC for PLC used. The table below shows the total number of dishes washed as a function of the number **Analysis** of times the dishwasher is used. **Thinking** Restaurant Dishwasher **Related SEs** Total Number of **Data Analysis** Number of Dishes Washed Times Used State Local **SE Level Data** Item State Local 4 104 **Error Type** A/F □Procedural 6 156 Application Conceptual B/G 8 208 C/H Guessing D/J Based on the data in the table, what is the total number of dishes that will have been washed **Instructional Analysis** when the dishwasher is used 9 times? Evidence of ☐Similar to examples (taught) Record your answer and fill in the bubbles on your answer document. Transfer ☐Requires application (learned) Depth of Level 1 Level 3 Level 2 Knowledge ☐ Level 4 Concept \* Correct answer (234)

So What?	
Now What?	

	Analy	voic 1	Investigating	adt r	Question
X	<del>7 (</del> [UI]	y Jijo	<del>m v c sn</del> gam ę	$f^{\Pi}$	<del>QUU</del> SIIUI I

SE A.2A

**RC: 2** 

**A.2A** identify and sketch the general forms of linear (y = x) and quadratic (y = x2) parent functions

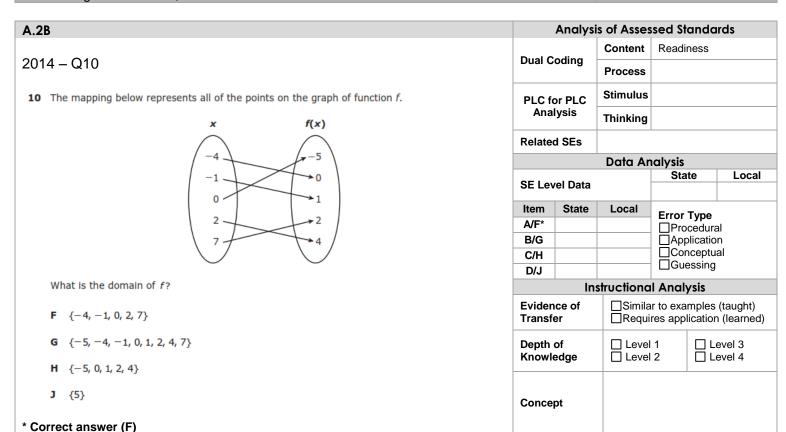
A.2A				Analysi	s of Asses	sed Standa	rds
2011	2014 016			Dual Coding		Supporting	
2014 – Q16 Dual Coding		Process					
16	16 Which statement about the quadratic parent function is true? PLC for PLC		Stimulus				
			Ana	lysis	Thinking		
	F	Its graph is symmetrical about the x-axis.	Relate	d SEs			
	G	Its graph is symmetrical about the y-axis.			Data Ar	alysis	
			SE Level Data			State	Local
	Н	Its domain is the set of all non-negative numbers.					
	J	Its range is the set of all real numbers	Item	State	Local	Error Type	
	,	Its range is the set of all real numbers.	A/F			Procedura	al
			B/G*			Applicatio	
			C/H			☐Conceptu ☐Guessing	
			D/J				
				ln:	structiona	l Analysis	
			Evider Transf			r to examples res application	
			Depth Knowl		Level	. —	evel 3 evel 4
* Correct answer (G)			Conce	pt		'	

A.2A Analysis of Assessed Standards					ds	
			Content	ntent Supporting		
2013 – Q36	Dual C	baing	Process			
The set of ordered pairs below represents some points on the graph of function $f$ .	PLC fo	or PLC	Stimulus			
{(3, 11), (-1, 3), (5, 15), (-4, -3), (-7, -9)}	Anal	ysis	Thinking			
	Related	d SEs				
What is the parent function of f?	Data Analysis					
<b>.</b>	y = x  SE Level Data			State	е	Local
$\mathbf{F}  \mathbf{y} = \mathbf{x}$						
0 o¥	Item State A/F*		Local	Error Type		
$\mathbf{G}  y = 2^x$						
2	B/G			Appl		
$\mathbf{H}  y = x^2$	C/H			☐Cond		l
	D/J				ssiriy	
$\mathbf{J}  y = \sqrt{x}$	Instructional Analysis					
	Evidence of ☐ Similar to examples (taught) ☐ Requires application (learned					
	Depth (		Level		□ Le	
* Correct answer (F)	Conce	ot				

So What?	
Now What?	



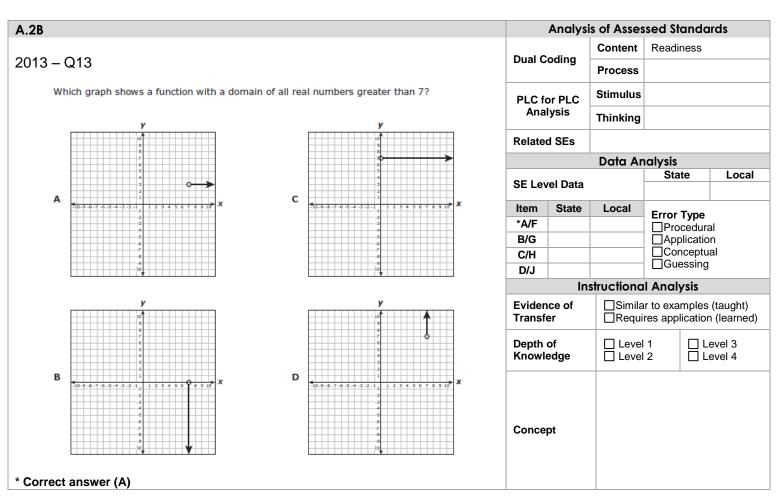
**A.2B** identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete



So What?	
Now What?	

A.2B	A	nalysis	of Asses	sed Sta	ndards	
2014 – Q39	Dual Coding		Content Process	Readiness		
<b>39</b> Function <i>f</i> is graphed below.	PLC for	PLC	Stimulus			
<u>у</u>	Analys	Analysis Thinking				
4	Related S	SEs				
3			Data An			
	SE Level	Data		State	e Local	
		State	Local	Error T	vpe	
-4 -3 -2 -1 1 2 3 4 X	A/F			Proce	edural	
	B/G C/H		☐ Applic		cation eptual	
	*D/J			□Gues	sing	
-3	Instructional Analysis					
-4	Evidence of			☐Similar to examples (taught)☐Requires application (learned)		
What is the range of $f$ ?	Depth of Knowled		Level		Level 3	
<b>A</b> $\{x \mid -2 \le x < 4\}$	Milowica	90				
<b>B</b> $\{x \mid -2 < x \le 4\}$						
<b>c</b> $\{y \mid -3 < y \le 3\}$	Concept					
<b>D</b> $\{y \mid -3 \le y < 3\}$						
* Correct answer (D)						

So What?	
Now What?	



A OD		Analysi	of Assoc	and St	andar	da
A.2B	Analysis of Assessed Standards  Content Readiness			us		
2013 – Q48	Dual C	oding	Content	Reauii	1622	
2010 & 10			Process			
What is the range of the function shown below?		or PLC	Stimulus			
x   f(x)	Ana	lysis	Thinking			
	Relate	d SEs				
/ -7 / <b>/</b> -9 \			Data An	alysis		
-2 -4	SE Level Data State Loc			Local		
0 -1						
5 / 5 /	Item State Local Error Type					
	A/F		☐ Procedural ☐ Application			
	B/G*				olication oceptua	
F {-7, -2, 0, 5}	D/J			Gue		
G {-9, -4, -1}	Instructional Analysis					
	Evidence of Similar to examples (taught)					
H {-9, -7, -4, -2, -1, 0, 5}	Transf	er	□Requi	res appl	ication	(learned)
J {-1}	Depth Knowle		Level		☐ Le	
* Correct answer (G)	Conce	pt		'		

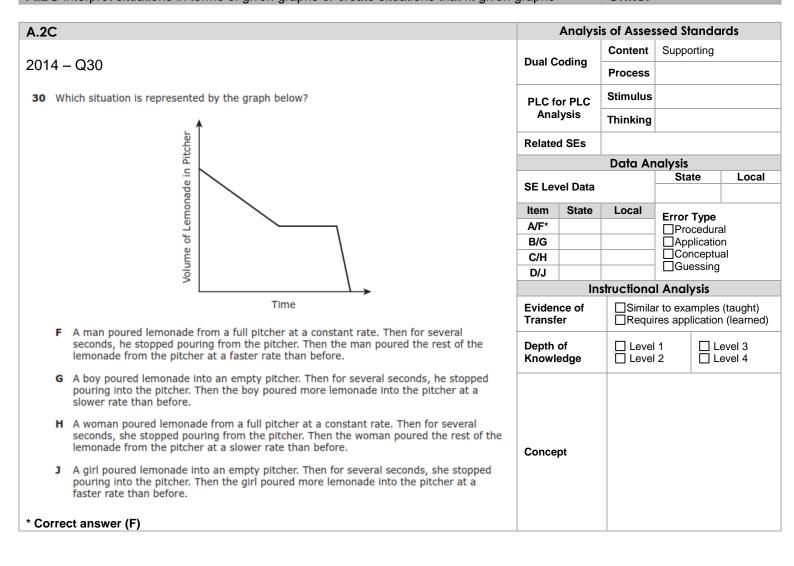
So What?	
Now What?	

**SE A.2C** 

**RC: 2** 

**A.2C** interpret situations in terms of given graphs or create situations that fit given graphs

п	n	:4	_	
	•	ш	-	



So What?	
Now What?	



Analysis   Investigating the Question					RC	·: Z
<b>A.2D</b> collect and organize data, make and interpret scatterplots (including recogniz negative, or no correlation for data approximating linear situations), and model, predmake decisions and critical judgments in problem situations			Units:			
	ı					
A.2D		Analysi	s of Asses	sed Stai	ndards	3
	Dural C		Content	Readine	:SS	
2014 – Q2	Dual Coding		Process			
2 The scatterplot shows the number of free throws that different basketball players attempted and the number that each player made.	PLC for PLC		Stimulus			
Free Throws	Anal	ysis	Thinking			
y Tree milows	Related SEs					
80	Data Analysis					
₩ 70				State		Local
9 70 E 60	SE Lev	el Data				
50 0 40 0	Item	State	Local	Error Ty	me	
₽ 40 • • • • • • • • • • • • • • • • • •	A/F			□Proce		
20	B/G*			Application Conceptual Guessing		
10	C/H					
	D/J			∐Gues	sing	
0 10 20 30 40 50 60 70 80 90		Ins	structiona	I Analys	is	

Evidence of

Transfer

Depth of

Concept

Knowledge

☐Similar to examples (taught)

Level 1 Level 2

Requires application (learned)

Level 3 Level 4

Free Throws Attempted

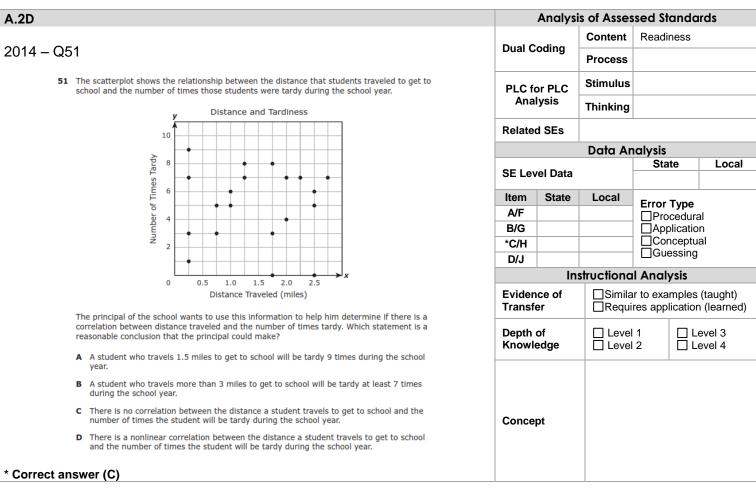
Based on the trend in the data, approximately how many free throws would a player be expected to make if he attempted 60 free throws?

So What?	
Now What?	

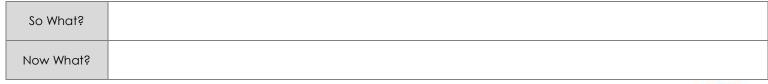
F 50G 35H 25

J 60

\* Correct answer (G)



### A.2D **Analysis of Assessed Standards** Content Readiness **Dual Coding** 2013 - Q1**Process** A dentist made the scatterplot below to show the number of cavities her patients had as it Stimulus **PLC for PLC** relates to the number of times they flossed their teeth each week. **Analysis Thinking** Cavities and Flossing Related SEs Number of Cavities **Data Analysis** State Local **SE Level Data** 3 State Item Local **Error Type** 2 A/F □ Procedural ☐ Application ☐ Conceptual B/G \*C/H 0 5 Guessing Number of Times the Patient D/J Flossed Each Week **Instructional Analysis** Which of the following best describes the correlation for the data? Evidence of ☐Similar to examples (taught) **Transfer** Requires application (learned) A Positive correlation C Negative correlation Depth of ☐ Level 1 Level 3 **B** Nonlinear correlation D No correlation Level 2 Level 4 Knowledge \* Correct answer (C) Concept



A.2D						Analysis of Assessed Standards										
	•										Dual Cadina		Content	Readiness		
2013 – Q38		Dual Coding		Process												
	A teacher collected data					•					PLC fo	or PLC	Stimulus			
	the relationship betwee scored on Quiz 2.	n the i	number of	points sco	orea on t	Quiz I ai	ina un	ne number	or points			lysis	Thinking			
		y		Quiz Sc	ores		_				Relate	d SEs				
		100			+		-						Data An	alysis		
	7.	90 80				•					SE Lev	el Data		State	Local	
	n Quiz	70			•						Item	State	Local			
	Scored on	60		•							A/F			Error Type ☐Procedu		
	Scor	50									B/G			□Applicati	ion	
	Points 9	40					C/H	Н		Conceptual						
	. <u>ē</u>	30			D/J*			□Guessin	g							
		10									Instructional Analysis					
		0	10 20 30	40 50 60 ts Scored			×				Eviden Transf		☐Similar to examples (taught) ☐Requires application (learned)			
	Which statement descri	bes th		is scored	on Quiz	1					Depth Knowle		Level		Level 3 Level 4	
	F The number of point Quiz 1 for any stude							of points so	cored on							
	G The number of point on Quiz 1 for any st								ts scored							
	H The number of points scored on Quiz 2 was greater than the number of points scored on Quiz 1 for any student who scored at least 50 points on Quiz 1.			Conce	pt											
J The number of points scored on Quiz 2 was less than the number of points scored on Quiz 1 for any student who scored 50 or fewer points on Quiz 1.																
* Correc	t answer (J)															

So What?	
Now What?	

Units:

### **A.3A** use symbols to represent unknowns and variables

A 2	A	Analysis of Assessed Standards							
A.3A			Andiysi						
	2014 – Q32		Dual Coding		ontent Supporting				
201									
32	An online music service lets customers download an unlimited number of songs for \$0.25 each after paying a monthly membership fee of \$5.00. The total amount of money a customer	PLC fo	— .	Stimulus					
	spends on music in dollars in a single month can be found using the function $y = 0.25x + 5$ . What does the variable $x$ represent in this function?	Analysis		Thinking					
	what does the variable x represent in this function?	Related	d SEs						
	<b>F</b> The total amount of money the customer spends on music each month			Data An	alysis				
	<b>G</b> The number of songs the customer downloads each month	SELOV	el Data	State		Local			
	H The number of customers that use the music service	JL Lev	ei Data						
	The number of customers that use the music service	Item	State	Local	Error Typ	<b>a</b>			
	J The cost of downloading one song	A/F			Procedu				
		B/G*			Applica				
		C/H			Concep				
		D/J			□Guessir	ng			
		Instructional Analysis							
					milar to examples (taught) equires application (learned)				
		Depth Knowle				Level 3 Level 4			
* Co	* Correct answer (G)		pt						

A.3A		Analysis of Assessed Standards						
		Dual Coding		Content	Content Supporting			
2013	3 – Q29	Duai C	oung	Process				
	A store manager begins each shift with the same total amount of money. She keeps \$200	PLC fo	or PLC	Stimulus				
	in a safe and distributes the rest equally to the 5 cashiers in the store. This situation can	Anal	lysis	Thinking				
	be represented by the function $y = \frac{(x - 200)}{5}$ . What does the variable x represent in this	Related SEs						
	situation?			Data An	alysis			
	A The total amount of money the manager has at the beginning of a shift	SE Level Data			State	Local		
	A The total amount of money the manager has at the beginning of a shift							
	<b>B</b> The total amount of money the manager has at the end of a shift	Item	State	Local				
	C The amount of money each cashier has at the beginning of a shift	*A/F	*A/F		Error Type ☐Procedur			
	D The amount of money each cashier has at the end of a shift	B/G C/H			☐Applicatio			
		D/J			Guessing			
		2,0	Ins	nstructional Analysis				
		F. dalam				/( - · · l- ()		
		Evidence of Transfer			r to examples res applicatio			
	Depth of Knowledge		Level 1 Level 2 Level 2					
* Correct answer (A)		Conce	pt					

So What?	
Now What?	



IQ Analysis	Investigating	the Question
i Q Ai luiysis		

SE A.3B

**RC: 2** 

### **A.3B** look for patterns and represent generalizations algebraically

A.3B			Analysi	s of Asses	sed Standa	ırds	
		Dual Coding		Content Supporting			
2014 – Q23				Process			
23 The first five terms in a pattern are shown below.	The first five terms in a pattern are shown below.		or PLC	Stimulus			
-0.5, -0.25, 0, 0.25, 0.	5,	Analysis		Thinking			
		Related	d SEs				
If the pattern continues, which expression can be used t	o find the nth term?			Data Analysis			
		SELOV	rol Doto		State	Local	
<b>A</b> $0.75n - 1.25$		SE Level Data					
<b>B</b> -0.35- 0.35		Item	State	Local	Error Type		
<b>B</b> $-0.25n - 0.25$		A/F			□Procedura		
<b>c</b> $0.25n - 0.75$	-	B/G			Applicatio		
0.2311 = 0.73	_	*C/H			☐Conceptu ☐Guessing		
$\mathbf{p} = -0.5n + 0.25$		D/J					
2 01511   0125			Ins	nstructional Analysis			
		Evidence of Transfer		☐Similar to examples (☐Requires application			
		Depth of Knowledge		☐ Level		evel 3 evel 4	
* Correct answer (C)		Conce	pt				

A.3B	Analysis of Assessed Standards				ards
			Content	Supporting	
2013 – Q43	Dual C	oaing	Process		
The first six numbers in a pattern are shown below.	PLC fo	or PLC	Stimulus		
$\frac{1}{3}$ , $\frac{4}{3}$ , $3$ , $\frac{16}{3}$ , $\frac{25}{3}$ , 12,	Ana	lysis	Thinking		
3 3 3 3	Relate	d SEs			
If the pattern continues, which expression can be used to find the $n$ th number in the pattern?	Data Analysis				
2-				State	Local
A $\frac{2n}{3}$	SE Level Data				
	Item	State	Local	Error Type	
<b>B</b> $\frac{n^2}{3}$	A/F			□Procedu	
3	*B/G			□ Applicati	
$n^2$	C/H			Concept	
c $\frac{n^2}{6}$	D/J			☐Guessin	g
	Instructional Analysis				
D $\frac{2n}{6}$	Evidence of Similar to examples (to Requires application (				
	Depth of Knowledge		Level		Level 3 Level 4
* Correct answer (B)	Conce	pt		'	

So What?	
Now What?	



SE A.4A

**RC: 2** 

**A.4A** find specific function values, simplify polynomial expressions, transform and solve equations, and factor as necessary in problem situations

A.4A	Analysis of Assessed Standards					
2014 – Q8		Dual Coding		Readiness		
8 The side lengths of the figure below are given in centimeters.	PLC fo	or PLC	Stimulus			
2x-3 12	Analysis		Thinking			
	Related	d SEs				
211			Data An	alysis		
2x-3	CE L au	al Data		State	Local	
2/ 3/		SE Level Data				
	Item	State	Local	Error Type		
	A/F			Procedu		
	B/G			Application		
If the perimeter of this figure is 78 cm, what is the value of x?	C/H*			Concepti		
F -12	D/J			☐Guessin	3	
F -12		Ins	tructiona	l Analysis		
<b>G</b> -6	Eviden	ce of		r to example:		
<b>H</b> 6	Transfe	er	□Requii	es application	n (learned)	
	Depth	of	☐ Level	1 🗆	_evel 3	
<b>J</b> 12	Knowle		Level		_evel 4	
* Correct answer (H)	Conce	pt				

A.4A	Analysis of Assessed Standards					
			Content	Readiness		
2014 – Q25	Dual Co	oding	Process			
<b>25</b> Which inequality is equivalent to $-3x + 2y > 5y + 9$ ?	DI C fo	r DI C	Stimulus			
25 Which modules is equivalent to 5x + 2y > 5y + 5.	PLC for PLC Analysis		Thinking			
<b>A</b> $y > x + 3$	Related	I SEs				
			Data An	nalvsis		
<b>B</b> $y > -x - 3$	SE Level Data			State	Local	
	SE Level Data					
<b>C</b> $y < x - 3$	Item	State	Local	Error Type		
	A/F			□Procedura		
<b>D</b> $y < -x - 3$	B/G			Application		
	C/H			☐Conceptua ☐Guessing		
	*D/J					
	Instructional Analysis					
	Evidence of ☐ Similar to examples (taught ☐ Requires application (learn					
	Depth of Knowledge				evel 3 evel 4	
* Correct answer (D)	Concept					

So What?	
Now What?	

A.4A	Analysis of Assessed Standards					ds	
	Dual Coding		Content	Readiness			
2014 – Q42	Dual Coung		Process				
43. If $f(y) = \frac{2}{3} y^2 + 9y$ , what is the value of $f(x) = \frac{2}{3} y^2 + 9y$ .	PLC for PLC		Stimulus				
<b>42</b> If $f(x) = \frac{2}{3}x^2 + 8x$ , what is the value of $f(6)$ ?	Analysis		Thinking				
December 2011 in the highles on your annual decimant	Related SEs						
Record your answer and fill in the bubbles on your answer document.			Data An	alysis			
	SELO	el Data		State		Local	
	SE Lev	ei Dala					
	Item	State	Local	Error Type			
	A/F			□ Procedural			
	B/G			Application			
	C/H			Conceptual			
	D/J			□Gues			
	Instructional Analysis						
					examples (taught) application (learned)		
	Depth of Knowledge		Level 1		_ Le		
* Correct answer (72)	Concept						
			'				
A.4A		Analysi	s of Asses	sed Stai	ndar	ds	
2010	Dual C	adina	Content	Readine	ss		

A.4A Analysis of Assessed Standards					
			Content Readiness		143
2013 – Q6	Dual Coding		Process		
The perimeter of a rectangle is 42 centimeters. The length of the rectangle can be represented by $(x + 4)$ , and its width can be represented by $(2x - 7)$ . What are the	PLC for PLC		Stimulus		
dimensions of this rectangle in centimeters?	Anal	ysis	Thinking		
F Length = 10 and width = 11	Related	d SEs			
			Data An	alysis	
G Length = 8 and width = 13				State	Local
H Length = 6 and width = 15	SE Level Data				
	Item	State	Local	Error Type	
J Length = 12 and width = 9	A/F			Procedura	al
	B/G			□ Applicatio	
	C/H			Conceptu	al
	D/J*			☐Guessing	
	Instructional Analysis				
	Evidence of Transfer Similar to examples (taught) Requires application (learned				
	Depth of Knowledge				evel 3 evel 4
* Correct answer (J)	Concept				

So What?	
Now What?	



A.4A		Analysis of Assessed Standards					
				Content	ent Readiness		
2013 – Q22		Dual Coding		Process			
	Which inequality is equivalent to $7x - 2y > 8$ ?	Analysis		Stimulus			
				Thinking			
	$F y > \frac{7}{2}x + 8$	Related SEs					
	2			Data Analysis			
		CE Lavel Data			State		Local
	G $y > -\frac{2}{7}x + \frac{8}{7}$	SE Level Data					
	$y > -\frac{1}{7}x + \frac{1}{7}$	Item	State	Local	Error Type		
		A/F				☐Procedural ☐Application	
	7	B/G					
	H $y < \frac{7}{2}x - 4$	C/H*			☐Conce		
	2	D/J			Guess	iii iy	
		Instructional Analysi			S		
	<b>J</b> $y < -\frac{2}{7}x - \frac{4}{7}$	Evidence of Similar to examples ( Transfer Requires application					
		Depth (		☐ Level		] Lev	
* Correct answer	r (H)	Concept					

A.4A		Analysis of Assessed Standards				
				Content	Content Readiness	
2013 – Q53		Dual C	oaing	Process		
w	hich expression is equivalent to $-6x^2 - 11x - 4$ ?	PLC for PLC		Stimulus		
	men expression is equivalent to the same of the same o			Thinking		
Α	(3x + 7)(3x - 3)	Related	d SEs			
			·	Data An	alysis	
В	(-3x + 4)(2x - 1)	SELOV	ol Data		State	Local
_	( 3/1 1)(2/1 2)	SE Level Data				
	(2 7)(2 2)	Item	State	Local	Error Type	
C	(3x-7)(3x+3)	A/F			Procedura	al
		B/G			Application	
D	(-3x-4)(2x+1)	C/H			☐Conceptu ☐Guessing	
		*D/J				
		Instructional Analysis				
		Evidence of Transfer Similar to example Requires application				
		Depth of Knowledge		Level 1 Level 2		evel 3 evel 4
* Correct answ	er (D)	Concept				

So What?	
Now What?	

Q Analysis	Investigating	the Question

SE A.4B

**RC: 2** 

**A.4B** use the commutative, associative, and distributive properties to simplify algebraic expressions

A.4B			Analysi	of Asses	sed Standa	rds
0044	0.47	Dual Cadina		Content Supporting		
2014 -	- Q4 <i>1</i>	Dual Coding		Process		
4-	which are solved as $2 \begin{pmatrix} 1 \\ 1 \end{pmatrix} = 2 \begin{pmatrix} 1 \\ 1 \end{pmatrix}$	PLC for PLC		Stimulus		
47	Which expression is equivalent to $3c\left(\frac{1}{3}d-9\right)-7(c+1)+d(c+4)$ ?	Ana	lysis	Thinking		
	A 2-4 24-14 7	Relate	d SEs			
	<b>A</b> $2cd - 34c + 4d - 7$		,	Data An	alysis	
					State	Local
	B 2cd – 7c – 4	SE Level Data				
	<b>c</b> $2cd + 34c + 4d + 7$	Item	State	Local	Error Type	
	200 + 540 + 40 + 7	*A/F			Procedura	
		B/G			Applicatio	
	<b>D</b> $2cd + 8c + 4$	C/H			☐Conceptu ☐Guessing	
		D/J			Guessing	
		Instructional Analysis				
				to examples (taught) es application (learned)		
				<u> </u>		
				Level		evel 3 evel 4
* Corre	ct answer (A)	Concept				

A.4B	Analysis of Assessed Standards				
Post Oct 1		Dual Coding Con		Supporting	
2013 – Q9	Duai C	baing	Process		
In which step below does a mistake first appear in simplifying the expression	PLC fo	or PLC	Stimulus		
0.5(-12c + 6) - 3(c + 4) + 10(c - 5)?	Anal	ysis	Thinking		
Step 1: $-6c + 3 - 3(c + 4) + 10(c - 5)$	Related	l SEs			
Step 2: $-6c + 3 - 3c - 12 + 10(c - 5)$	Data Analysis				
Step 3: $-6c + 3 - 3c - 12 + 10c - 50$	SE Lev	al Data		State	Local
Step 4: 7 <i>c</i> – <b>4</b> 1	SE Lev	ei Dala			
5 top 11 70 11	Item State		Local	Error Type	
A Stop 1	A/F			Procedura	al
A Step 1	B/G			Application	n
B Step 2	C/H			Conceptu	
	*D/J			☐Guessing	
C Step 3	Instructional Analysis				
D Step 4	Evidence of ☐ Similar to examples (taught) ☐ Requires application (learned)				
	Depth of ☐ Level 1 ☐ Level 3 ☐ Level 4				
* Correct answer (D)	Concep	ot		<u> </u>	

So What?	
Now What?	



### **A.5B** determine the domain and range for linear functions in given situations

A.5	В	Analysis of Assessed Standards					
004	4 007	Dual Coding		Content	ntent Supporting		
201	4 – Q27	Duai C	ounig	Process			
27	The total cost of renting a banquet hall is a function of the number of hours the hall is rented.	PLC for PLC Analysis		Stimulus			
	The owner of the banquet hall charges \$85 per half hour up to a maximum of 4 hours plus a \$50 cleaning fee. What is the greatest value in the range for this situation?			Thinking			
	Record your answer and fill in the bubbles on your answer document.	Relate	d SEs				
			Data Analysis				
		SE Level Data			State	Local	
		Item	State	Local	Error Type		
		A/F			□Procedur		
		B/G			Application		
		C/H			Concept		
		D/J			☐Guessin	9	
			Ins	structional Analysis			
		Evidence of Transfer				o examples (taught) application (learned)	
		Depth Knowle		☐ Level		∟evel 3 ∟evel 4	
* Co	orrect answer (730)	Conce	pt				

A.5B		Analysi	s of Asses	sed Stand	lards
	Dual Coding		Content Supportin		
2013 – Q39			Process		
The number of ferryboat trips, $f(c)$ , needed to transport $c$ cars in 1 day can be found using	PLC for PLC Analysis		Stimulus		
the function $f(c) = \frac{c}{20}$ . If there are no more than 5,000 cars transported by ferryboat daily,			Thinking		
what is the range of the function for this situation?	Related	l SEs			
P	Data Analysis				
				State	Local
	SE Lev	el Data			
	Item	State	Local	Errar Tim	
	A/F			Error Type □Procedu	
	B/G			Applicat	
	C/H			□Concep	tual
	*D/J			☐Guessir	ng
		Ins	nstructional Analysis		
A The set of all integers greater than or equal to 5,000				to examples (taught) es application (learned)	
<b>B</b> The set of all integers from 0 to 5,000	Depth of		☐ Level	4 🗆	Laval 2
C The set of all integers greater than or equal to 250	Knowledge		Level		Level 3 Level 4
D The set of all integers from 0 to 250					
* Correct answer (D)	Concep	ot			

So What?	
Now What?	



**A.5C** use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions

A.5C Analysi			of Asses	sed Standa	rds
	Dual Coding		Content	Readiness	
2014 – Q1			Process		
1 Which situation can be represented by $y = 12x - 4$ ?	PLC for PLC		Stimulus		
	Analysis		Thinking		
A The number of eggs, y, in x dozen eggs for sale after 4 dozen eggs are sold	Related	d SEs			
<b>B</b> The cost, $y$ , of buying $x$ movie tickets that sell for \$8 each	Data Analysis				
<b>C</b> The cost, y, after a \$4 discount, of buying x T-shirts that sell for \$12 each	SE Level Data			State	Local
	OL LOV				
<b>D</b> The number of inches, y, in an x-foot-tall tree after cutting off 4 feet	Item	State	Local	Error Type	
	A/F			□Procedura	
	B/G			Applicatio	
	*C/H			☐Conceptu ☐Guessing	
	D/J				
	Instructional Analysis				
	Evidence of ☐ Similar to examples (taught) ☐ Requires application (learned				
	Depth of Knowledge		Level		evel 3 evel 4
* Correct answer (C)	Conce	ot			

A.5C	Analysi	s of Asses	sed Stando	ırds	
2011 200	Dual Coding	Content	Readiness		
2014 – Q22	Dual County	Process			
22 Which equation can be represented by the graph shown below?	PLC for PLC	Stimulus			
<b>y</b>	Analysis	Thinking			
8 7	Related SEs				
6 5 5		Data An	alysis		
4	051 154		State	Local	
	SE Level Data				
29 -8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 0 Z 8 9 X	Item State	Local	Error Type		
-2	A/F		□Procedura	al	
-3 -4	B/G		☐Application		
-5 -6	C/H		Conceptu		
-7	D/J*		☐Guessing		
-9	Instructional Analysis				
$\mathbf{F}  -3x + 8y + 16 = 0$	Evidence of Transfer	□Simila □Requi	r to examples res application	(taught) n (learned)	
<b>G</b> $3x - 8y + 16 = 0$	Depth of	Level		evel 3	
$\mathbf{H}  -3x - 8y - 16 = 0$	Knowledge	Level	2   L	evel 4	
$\mathbf{J}  3x + 8y - 16 = 0$	Concept				
* Correct answer (J)					

A.5C		Analysi	s of Assoc	sed Stand	ards	
A.5C		Andiysi				
2014 – Q41	Dual Coding		Content	Readiness		
2017 - Q71			Process			
<b>41</b> Which representation shows the same relationship as $g(x) = \frac{4}{3}(6x + 3)$ ?	PLC fo	or DI C	Stimulus			
The first representation shows the same relationship as $g(x) = \frac{1}{3}(0x + 3)$ ?	Analysis		Thinking			
	Dalata	100-	9			
x = g(x)	Related	3 SES				
28 3 A 12 1			Data Ar	alysis State	Local	
A 12 1 1 -20 -3	SE Lev	el Data		State	Locai	
-36 -5	Item	State	Local			
	A/F			Error Type	) ral	
<b>B</b> $g = \{(13, 108), (10, 94), (4, 36), (-3, -20)\}$	B/G			□Procedu □Applicati	on	
<b>b</b> y = {(15, 166), (16, 54), (4, 56), (5, 26)}	C/H			☐ Concept	ual	
y v	*D/J			☐Guessin	g	
		Ins	structiona	l Analysis		
	Evidence of			☐Similar to examples (taught)☐Requires application (learned		
C	Depth (		Level	1	Level 3 Level 4	
-10						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Conce	ot				
* Correct answer (D)						

So What?	
Now What?	

A.5C		,	Analysi	s of Asses	sed Sta	ndards	
2013 – Q7			oding	Content	t Readiness		
2013 – Q1			,g	Process			
A graph is shown below.  PLC for PLC Analysis		Stimulus					
	у	Anal	ysis	Thinking			
	9	Related	SEs				
	7			Data An	alysis		
	5 5 4	SE Lev	el Data		State	Local	
	3 2	Item	State	Local	Error T	v/ne	
	-9 -8 -7 -6 -5 -4 -3 -2 -1 1 2/3 4 5 6 7 8 9 X	*A/F			Proce	edural	
		B/G			Appli	cation	
	-3	C/H			Conc	eptual	
	-4 -5	D/J			□Gues	sing	
			Ins	tructiona	l Analys	sis	
		Evidend Transfe				ples (taught) ation (learned	I)
	Which of the following equations are represented by the graph?	Depth o		Level		Level 3 Level 4	
	I. $y = -\frac{3}{2}x - 2$						_
	II. $2x - 3y = 6$						
	III. $y = (x - 2)(x - 3)$						
	IV. $y - 2 = \frac{2}{3}(x - 6)$						
	A II and IV	Concep	ot				
	B I and III						
	C II and III						
	D I and IV						
* Correct ans	wer (A)						

So What?	
Now What?	

A.5C		Ar	nalysis	of Asses	sed Stando	ırds
		Dual Coding		Content	Readiness	
2013 – Q21		Duai Codi	ing	Process		
The late fee for overdue books at a library is \$0		PLC for F	PLC	Stimulus		
fee of \$5.00 per book. Which graph models the out on the same day and are overdue?	total late fee for 3 books that were checked	Analys	is	Thinking		
		Related S	Es			
Fees for Overdue Books	Fees for Overdue Books			Data An	alysis	
		SE Level	Doto		State	Local
<b>A</b> 9 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	(\$) 4 (\$) 4	SE Level	Dala			
			State	Local	Error Type	
9 2	9 2 9 1	A/F			Procedur	
		B/G			Application	
0 1 2 3 4 5 6 7 8 9 10	0 1 2 3 4 5 6 7 8 9 10	C/H			☐Conceptual ☐Guessing	
Days Overdue	Days Overdue	*D/J		1		<u> </u>
			ins	tructiona	l Analysis	
Fees for Overdue Books	Fees for Overdue Books	Evidence Transfer	of		r to examples res application	
B LL 3 8 2	D H H H H H H H H H H H H H H H H H H H	Depth of Knowledg	ge	Level		evel 3 evel 4
Days Overdue	9 2 1 1 1 2 3 4 5 6 7 8 9 10 x  Days Overdue	Concept				
Days Overdue	Days Overdue	3000pt				
* Correct answer (D)						
A.5C		Ar	nalysis	of Asses	sed Stando	ırds
_		D1 0 "		Content	Readiness	
2013 – Q49		Dual Codi	ıng	_		

A.5C	Analysis of Assessed Standards						
	Decel On the se		Content	t Readiness			
2013 – Q49	Dual Coding		Process				
Which set of ordered pairs contains only points that are on the graph of the function $y = 12 - 3x$ ?	PLC for PLC		PLC for PLC		Stimulus		
	Analysis		Thinking				
<b>A</b> {(-3, -27), (0, 0), (6, 54)}	Related SEs						
<b>B</b> {(-18, 10), (-6, 6), (18, -2)}	Data An			Data Analysis			
C {(-5, 27), (-1, 15), (8, -12)}	SE Level Data			State	Local		
D {(-7, -9), (-4, 0), (2, 18)}			1 1				
	Item A/F	State	Local	Error Type	-1		
	B/G			☐Procedura ☐Application			
	*C/H			□Conceptu	al		
	D/J			☐Guessing			
	Instructional Analysis						
	Evidence of ☐ Similar to examples (taught) ☐ Requires application (learned)						
			☐ Level		evel 3 evel 4		
* Correct answer (C)	Conce	pt		'			

So What?	
Now What?	

IQ Analysis	Investigating	the Question

SE A.6A

**RC: 3** 

**A.6A** develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations

A.6A									Analysi	s of Asses	sed Standa	rds	
0044	00							Dual C	Dual Coding		Supporting		
2014 –	2014 – Q3			Duai	Dual Coung								
3	3 Which table shows the same rate of change of y with respect to x as $y = 4 - \frac{5}{8}x$ ?			PLC fe	PLC for PLC								
							8	Ana	lysis	Thinking			
		х	у		х	l y	1	Relate	d SEs				
								Data An	alysis				
			-4 6.5		051 15:		State	Local					
		-1	-4	C	2	2.75	4	SE Lev	SE Level Data				
		5 20	4 1.5 8 -1	Item A/F	State	Local	Error Type						
				<u> </u>					□Procedura				
								B/G			Applicatio	n	
		x	у		x	V	1	*C/H			Conceptu		
		-4	10.4		-3	12	1	D/J			☐Guessing		
	В	2	0.8	D	_	4	1		Ins	tructiona	ructional Analysis		
	•	4 8	-2.4 -8.8		-1 2 5	-8 -20	1	Evider Transf		☐Similar to examples (taught) ☐Requires application (learned)			
								Depth Knowl		Level		evel 3 evel 4	
* Correc	t an	swer (C	<b>;</b> )					Conce	pt				

So What?	
Now What?	

SE A.6B

**RC: 3** 

A.6B interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs

Units:

A.6B	Analysi	s of Asses	sed Stand	ards	
		Content	Readiness		
2014 – Q17	Dual Coding	Process			
17 The graph shows the relationship between the number of cookies a presenter at a convention had left to give away and the number of presentations she had made.	PLC for PLC	Stimulus			
Cookies at Presentation	Analysis	Thinking			
180	Related SEs				
160		Data An	alysis		
₹ 140	SE Level Data		State	Local	
140 9 120	SE Level Data				
80 Ki	Item State	Local	F T		
8 60	A/F		Error Type		
40	B/G		Applicati		
20	C/H			Conceptual	
0 1 2 3 4 5 6 7 8 9 10	*D/J		☐Guessin	9	
Presentations Made	Ins	structiona	l Analysis		
What does the x-intercept of the graph represent?	Evidence of Transfer	Simila	r to example		
A The number of cookies the presenter had before making any presentations					
<b>B</b> The maximum number of cookies the presenter gave away during every presentation	Depth of Knowledge	Level		_evel 3 _evel 4	
<b>C</b> The number of presentations the presenter made per hour	Kilowieuge	L Level	2   🗀	_evei 4	
D The maximum number of presentations the presenter made before running out of cookies	Concept				
* Correct answer (D)					

0044 000			Duel C	a dina	Content	Readiness			
2014 -	- Q38				Dual Coding		Process		
38 The table shows the playing time in minutes of high-definition videos and the fil videos in megabytes (MB). Videos			videos and the file size of these	PLC for PLC		Stimulus			
				Anal	lysis	Thinking			
		Playing Time, x	File Size, y		Related SEs				
		(min)	(MB)				Data An	alysis	
		0.5	60					State	Local
		1.5	180		SE Lev	el Data			
		2	240		Item	State	Error Type		
		4.5	540		A/F*				
		5	600				☐Procedura ☐Application		
				•				Conceptua	
	What does the slope of the	graph of this citus	tion represent?		C/H				ai .

What does the slope of the graph of this situation represent?

- F The increase in the file size of the video per minute of playing time
- G The file size of each video
- **H** The playing time of each video
- J The increase in the playing time per MB of video

D/J			ШСи	essing			
	Ins	tructiona	ructional Analysis				
Eviden Transfe	•••		☐Similar to examples (taught) ☐Requires application (learned				
Depth Knowle		☐ Level	evel 1				
Conce	pt						

**Analysis of Assessed Standards** 

CO	rre	Ct	ans	SW6	er (	F)

A.6B

So What?			
Now What?			

### A.6B **Analysis of Assessed Standards** Content Readiness **Dual Coding** 2013 - Q5**Process Stimulus** The graph below shows the relationship between the number of dollars a worker earns and PLC for PLC the number of hours worked. **Analysis Thinking** Worker's Earnings **Related SEs** 320 **Data Analysis** Amount Earned (\$) 280 State Local 240 **SE Level Data** 200 160 State Item Local **Error Type** 120 Δ/F Procedural 80 \*B/G Application Conceptual C/H 0 4 8 12 16 20 24 28 32 36 40 ☐ Guessing D/J Time Worked (h) **Instructional Analysis** What does the slope of the graph represent? Evidence of ☐Similar to examples (taught) Transfer ☐Requires application (learned) A The number of hours of work it takes to earn \$320 Depth of ☐ Level 1 ☐ Level 3 The amount of money earned per hour Level 2 Knowledge Level 4 The amount earned for 40 hours of work D The number of hours worked per dollar earned Concept \* Correct answer (B) A.6B **Analysis of Assessed Standards** Content Readiness **Dual Coding** 2013 - Q47 Process A weightlifter is adding plates of equal weight to a bar. The table below shows the total **Stimulus PLC for PLC** weight, including the bar, that he will lift depending on the total number of plates on the bar. **Analysis Thinking Related SEs Data Analysis** Total Weight Number of State Local Plates (lb) **SE Level Data** 115 State Local Item 4 185 **Error Type** A/F 6 255 □Procedural B/G Application 325 8 \*C/H □ Conceptual Guessing

So What?	
Now What?	

D/J

Evidence of

Transfer

Depth of

Concept

Knowledge

**Instructional Analysis** 

Level 1

Level 2

☐Similar to examples (taught)

Requires application (learned)

Level 3

☐ Level 4

\* Correct answer (C)

Based on this information, which statement is true?

A The bar weighs 35 lb without any plates.

B The bar weighs 70 lb without any plates.

C The bar weighs 45 lb without any plates.

D The bar weighs 25 lb without any plates.

SE A.6C

**RC: 3** 

**A.6C** investigate, describe, and predict the effects of changes in m and b on the graph of y = mx + b

A.6C  2014 - Q7  The graph shows the time it took a worker to package 16 bottles of shampoo.  PLC for PLC Analysis Thinking  Related SEs  PLC for PLC Analysis Thinking  Related SEs  State Local    Note   N									
2014 – Q7  7 The graph shows the time it took a worker to package 16 bottles of shampoo.  PLC for PLC Analysis  Thinking  Related SEs  Data Analysis  State Local  State Local  Frocedural  B/G Application  C/H Application  C/H Conceptual  D/J Conceptual  D/J Conceptual  D/J Conceptual  Instructional Analysis  Evidence of Smillar to examples (taught) fransfer Requires application (learned)  A The new graph would have a y-intercept at 80.  B The new graph would have a y-intercept at 8.  Data Analysis  State Local  Fror Type  A/F APPlication  C/H Conceptual  D/J Smillar to examples (taught)  Transfer Requires application (learned)  Depth of Knowledge  Concept  Concept  Concept  Concept  Concept	A.6C			Analysi	s of Asses	sed St	anda	rds	
The graph shows the time it took a worker to package 16 bottles of shampoo.  Packaging Shampoo Bottles  PlC for PLC Analysis  Thinking  Related SEs  Data Analysis  State Local  Item State Local  A/F Procedural A/F Pr			Dual Coding		Content	Readir	ness		
Packaging Shampoo Bottles  Thinking  Related SES  Data Analysis  State Local  SE Level Data  State Local  Level Data  Item State Local  Replaced SES  Data Analysis  State Local  SE Level Data  State Local  Replaced SES  Instructional Analysis  Instructional Analysis  SE Level Data  SE Level Data  SE Level Data  SE Level Data  Item State Local  Replaced SES  Instructional Analysis  SE Level Data  SE Level Dat	2014 – Q7				Process				
Related SES    Data Analysis	7		1	PLC for PLC					
The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  D The new graph would have a y-intercept at 8.  Concept  Characteristics  SE Level Data  Item State Local  Prror Type   Procedural   Alphication   C/H   Conceptual   Guessing    Instructional Analysis  Evidence of   Similar to examples (taught)   Transfer   Requires application (learned)  Depth of   Level 1   Level 3   Knowledge   Level 2   Level 4    Concept		Packaging Shampoo Bottles	Ana	lysis	Thinking				
Item State Local Procedural A/F Procedural Application C/H Conceptual Guessing Instructional Analysis  The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.  Concept  Item State Local Procedural Application Conceptual Conceptual Guessing Similar to examples (taught) Transfer Requires application (learned)  Evidence of Transfer Similar to examples (taught) Requires application (learned)  Depth of Level 1 Level 3 Knowledge Level 2 Level 4		18	Relate	d SEs					
Item State Local Procedural A/F Procedural Application C/H Conceptual Guessing Instructional Analysis  The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.  Concept  Item State Local Procedural Application Conceptual Conceptual Guessing Similar to examples (taught) Transfer Requires application (learned)  Evidence of Transfer Similar to examples (taught) Requires application (learned)  Depth of Level 1 Level 3 Knowledge Level 2 Level 4		<u>u</u> 16			Data Ar	alysis			
Item State Local Procedural A/F Procedural Application C/H Conceptual Guessing Instructional Analysis  The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.  Concept  Item State Local Procedural Application Conceptual Conceptual Guessing Similar to examples (taught) Transfer Requires application (learned)  Evidence of Transfer Similar to examples (taught) Requires application (learned)  Depth of Level 1 Level 3 Knowledge Level 2 Level 4		8 14 12	CELO	ral Data		Stat	te	Local	
A/F  B/G  Application  C/H  Conceptual  D/J  Instructional Analysis  Evidence of Transfer  Brequires application (learned)  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would have a y-intercept at 8.  Concept  A/F  B/G  Application  C/H  D/J  Instructional Analysis  Evidence of Transfer  Brequires application (learned)  Depth of Knowledge  Concept  Concept  Concept  Concept		E							
A/F  B/G  Application  C/H  Conceptual  D/J  Instructional Analysis  Evidence of Transfer  Brequires application (learned)  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would have a y-intercept at 8.  Concept  A/F  B/G  Application  C/H  D/J  Instructional Analysis  Evidence of Transfer  Brequires application (learned)  Depth of Knowledge  Concept  Concept  Concept  Concept					Local	Error	Type		
*B/G			A/F						
Time (min)  The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.  Concept    Guessing		2	*B/G			Application Conceptual			
(min)  The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.  Concept    Distructional Analysis   Evidence of   Similar to examples (taught)   Requires application (learned)   Requires application (learned)   Level 1   Level 3   Knowledge   Level 2   Level 4		0 5 10 15 20 25 30 35 40 45 50	C/H					•	
The next day two workers packaged twice the number of bottles of shampoo in the same amount of time. If this new relationship is graphed on the same coordinate grid, which statement is true?  A The new graph would have a y-intercept at 80.  B The new graph would be steeper than the original graph.  D The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.  C Concept    Instructional Analysis   Similar to examples (taught)   Requires application (learned)   Requires application (learned)   Level 1   Level 3   Knowledge   Level 2   Level 4     Concept   Concept			D/J						
The new graph would have a <i>y</i> -intercept at 8.  The new graph would have a <i>y</i> -intercept at 8.  The new graph would have a <i>y</i> -intercept at 8.  Evidence of Transfer Similar to examples (taught) Transfer Requires application (learned)  Depth of Knowledge Level 1 Level 3 Knowledge Level 2 Level 4  Concept Concept		<b>,</b> ,		ln	structiona	l Analy	/sis		
B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a y-intercept at 8.		amount of time. If this new relationship is graphed on the same coordinate grid, which	Evidence of		Similar to examples (ta				
B The new graph would be steeper than the original graph.  C The new graph would be less steep than the original graph.  D The new graph would have a <i>y</i> -intercept at 8.  Concept		<b>A</b> The new graph would have a <i>y</i> -intercept at 80.	Denth	of		1		aval 3	
D The new graph would have a <i>y</i> -intercept at 8.  Concept							_		
Concept									
* Correct answer (B)		<b>D</b> The new graph would have a <i>y</i> -intercept at 8.	Conce	pt					
	* Correct ans	wer (B)							

A.6C			Analysi	s of Asses	sed Star	ıdards	3
		D l O		Content	Readine	SS	
2014 – Q29		Dual Coding		Process			
<b>29</b> Two f	unctions are given below.	PLC for PLC					
	f(x) = -4x + 1						
	$f(x) = -4x + 1$ $g(x) = -4x + \frac{1}{2}$	Related	d SEs				
			Data Ar	alysis			
		CELO	al Data		State		Local
How o	does the graph of $f$ compare with the graph of $g$ ?	SE Level Data					
	Item	State	Local	Error Ty	ma		
A Th	he graph of $f$ is less steep than the graph of $g$ .	A/F			☐Procedural ☐Application		
		B/G					
B Th	ne graph of $f$ has the same $y$ -intercept as the graph of $g$ .	*C/H			☐Conceptual☐Guessing		
C Th	ne graph of $f$ is parallel to the graph of $g$ .	D/J					
		Instructional Analysis					
<b>D</b> Th	he graph of $f$ is steeper than the graph of $g$ .	Eviden Transfe			r to examp res applica		
	Depth of Knowledge						el 3 el 4
* Correct answer	r (C)	Concept					
So What?							
Now What?							

A.6C	And	lysis of Asse	ssed Standa	rds
2014 045	Dual Codin	Content	Readiness	
2014 – Q45		Process		
<b>45</b> The slope and y-intercept of the line represented by $y = \frac{2}{5}x + \frac{3}{15}$ are both divided by $-\frac{1}{5}$ to	o PLC for Pl	-		
create a new line. Which graph represents the new line?	Analysis	Thinking		
v v	Related SE			
N int		Data Aı	nalysis	
	SE Level D		State	Local
	Item Sta	ite Local	Error Type	
A	A/F		☐ Procedural ☐ Application ☐ Conceptual	
3000070301 1 2345678010 X	B/G			
	*C/H		Guessing	
2	D/J			
-10		Instruction	ıl Analysis	
у	Evidence of Transfer		]Similar to examples (taugl ]Requires application (lear	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	Depth of Knowledge	☐ Leve		evel 3 evel 4
* Correct answer (C)	Concept			
Our ect answer (O)				

So What?	
Now What?	

#### A.6C **Analysis of Assessed Standards** Content Readiness **Dual Coding** 2013 - Q17 **Process** The slope and y-intercept of the graph of f were changed to make the graph of g, as shown **Stimulus PLC for PLC** below. **Analysis Thinking Related SEs Data Analysis** State Local **SE Level Data** State Item Local **Error Type** □Procedural B/G Application Conceptual \*C/H ☐ Guessing D/J **Instructional Analysis** Evidence of ☐Similar to examples (taught) Which statement describes the changes that were made to the graph of f to make the graph Transfer Requires application (learned) A The slope was multiplied by 2, and the y-intercept was decreased by 5 to make the Depth of Level 1 Level 3 Level 2 Knowledge Level 4 **B** The slope was multiplied by $-\frac{1}{2}$ , and the y-intercept was increased by 5 to make the C The slope was multiplied by -2, and the y-intercept was decreased by 5 to make the Concept **D** The slope was multiplied by $\frac{1}{2}$ , and the *y*-intercept was increased by 5 to make the graph of *g*. \* Correct answer (C) A.6C **Analysis of Assessed Standards** Content Readiness **Dual Coding** 2013 - Q33Process **Stimulus** The graph of line p represents $y = \frac{1}{5}x - 1$ . If the slope of line p is multiplied by -10 to **PLC for PLC Analysis Thinking** create line r, which statement about the graphs of the two lines is true? Related SEs A Line r intersects line p. **Data Analysis** State Local B Line r is parallel to line p. SE Level Data C Line r is 10 units above line p. Item State Local **Error Type** D Line r is 10 units below line p. \*A/F □ Procedural

So What?	
Now What?	

Application Conceptual

☐Guessing

☐Similar to examples (taught)

Requires application (learned)

Level 3

Level 4

**Instructional Analysis** 

Level 1

Level 2

B/G C/H

D/J

Evidence of

**Transfer** 

Depth of

Concept

Knowledge

\* Correct answer (A)

A.6C	Analysis of Assessed Standards					
	D1 0		Content	Readiness		
2013 – Q54	Dual C	oaing	Process			
If the graph of $y = 9x + 4$ is translated 4 units up, which equation describes the new graph?	_	or PLC	Stimulus			
F y = 9x + 8	Ana	lysis	Thinking			
$\mathbf{G}  y = 13x + 4$	Relate	d SEs				
7 - 23.1 1			Data Analysis			
H y = 13x + 8	SE Level Data			State	Local	
$\mathbf{J}  y = 4x + 4$	Item State		Local	Error Type		
	A/F*			Procedura	al	
	B/G			Applicatio	n	
	C/H			Conceptu		
	D/J			☐Guessing		
		In	structional Analysis			
	Eviden Transf		☐Similar to examples (taught) ☐Requires application (learne			
	Depth of Knowledge		☐ Level	_	evel 3 evel 4	
* Correct answer (F)	Conce	pt				

So What?	
Now What?	

Ο A		1:1:	11 4	O1!
Q Analysis	i inves	stigating	ine (	<b>Suestion</b>

SE A.6D

**RC: 3** 

**A.6D** graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept

_ I '						
A.6D	Analysis of Assessed Standards					
			Content	ontent Supporting		
2014 – Q48	Dual C	oaing	Process			
48 What is the equation of the line that has a slope of 0 and passes through the point $(6, -8)$ ?	PLC fo	or PLC	Stimulus			
$\mathbf{F}  x = 6$	Ana	lysis	Thinking			
	Relate	d SEs				
$\mathbf{G}  y = 6$			Data An	alvsis		
<b>H</b> $x = -8$			Daia Ail	State	Local	
X = -0	SE Lev	el Data				
<b>J</b> $y = -8$	Item	State	Local	Error Typo	ı	
	A/F			Error Type  ☐Procedura	al	
	B/G			☐ Application	n	
	C/H			Conceptu	al	
	D/J*			☐Guessing		
	Instructional Analysis					
	Evidence of Similar to examples (taught) Transfer Requires application (learned)					
	Depth Knowle		Level 1 Level 2		evel 3 evel 4	
* Correct answer (J)						
A.6D		Analysi	s of Asses	sed Stando	ırds	
			Content	Supporting		

A.6D	Analysis of Assessed Standards						
2010 200	Dual Cadina		Content Supporting				
2013 – Q30		Dual Coding					
What is the equation in standard form of the line that passes through the point (1, 24) and	PLC fo	or PLC	Stimulus				
has a slope of $-0.6$ ?	Ana	lysis	Thinking				
$\mathbf{F} = 3x + 5y = 125$	Relate	d SEs					
<b>G</b> $3x + 5y = 77$			Data Analysis				
3x + 3y = 77				State	Local		
<b>H</b> $3x + 5y = 123$	SE Level Data						
	Item	State	Local	Error Type			
3x + 5y = 115	A/F			Procedur	al		
	B/G			□ Application	n		
	C/H*			Conceptu			
	D/J			☐Guessing			
	Instructional Analysis						
				☐Similar to examples (ta ☐Requires application (le			
	Depth of Knowledge				evel 3 evel 4		
* Correct answer (H)	Conce	pt					

So What?	
Now What?	

**A.6F** interpret and predict the effects of changing slope and y-intercept in applied situations

A.6	F						Analysi	s of Asses	sed Stand	ards		
						Dural C	!!·	Content	Readiness			
201	4 – Q12					Dual Coding		Process				
12					be modeled by the function	PI C fe	or PLC	Stimulus				
					ched to the locomotive. The rain is now modeled by the	Analysis		Thinking				
		= 12c + 14.			atement describes the change in	Related SEs						
				Ttolato	u olo	Data An	alveie					
	F The locomotive is now 9 feet long, and the length of each passenger car remained the same.						Daia Aii	State	Local			
						SE Lev	el Data					
	<b>G</b> The locomo	otive is now 1	12 feet long, and t	he length of each	passenger car remained the	Item	State	Local	Error Type	• •		
	H Each passe	enger car is n	ow 9 feet long, an	nd the lenath of th	ne locomotive remained the	A/F			□Procedu	ıral		
	same.	ge. ea		.ag		B/G C/H			☐Applicat ☐Concep			
	J Each passe	enger car is n	ow 12 feet long, a	and the length of	the locomotive remained the	D/J*			Guessir			
	same.					2,0	ln:	structiona	l Analysis			
						Eviden			r to example	es (taught)		
						Transf				on (learned)		
						Depth	of	☐ Level	4 0	Level 3		
						Knowle		Level		Level 4		
* Correct answer (J)				Conce	nt							
		<b>Υ-7</b>				Conce	ρι					
	_						A 1			l •		
A.6							Anaiysi		sed Stand			
2014 026		Dual Coding		Content	Readiness							
201	2014 – Q36			Dual County		Process						
36					of points earned every month llars that month at participating	PLC for PLC		Stimulus	\$			
	restaurants.	id elite memb	ers or a diffiling club	b who spend a do	nais that month at participating	Analysis		Thinking				
			Dining Cl	ub Points		Relate	d SFs					
					1	rtolato		Data An	alveis			
			Member Status	Points Earned						Daia Aii	State	Local
			Regular	r = 5d + 100	1	SE Lev	el Data					
			Elite	e = 8d + 200	1	Item	State	Local	Error Type			
					•	A/F			□Procedu	ıral		
	Which statem	nent describes	the difference in	these situations?		B/G			☐Applicat			
	F Regular m	nembers earn	3 more points for	every dollar spen	t and are automatically	C/H*			Guessir			
			nts per month thar		•	D/J	In	structiona	l Analysis			
					t and are automatically	Eviden			r to example	e (taught)		
			nts per month than			Transf				on (learned)		
			nore points for eve onth than regular		nd are automatically awarded	Depth	of	☐ Level	1 🗆	Level 3		
		Knowle		Level		Level 4						
			onth than regular		ilu are automatically awarded							
* Correct answer (H)			Conce	pt								
		. ,						-				
S	o What?											
No	ow What?											



A.6F		Analysi	s of Asses	sed Stando	ırds
	Dual Coding		Content	Readiness	
2014 – Q53	Dual C	oding	Process		
The cost of staying at a hotel can be found using the function $y = 129x + 9.95$ , where x is the number of days a guest stays at the hotel and y is the cost in dollars. The cost includes a	PLC for PLC		Stimulus		
flat fee for Internet access. If the fee for Internet access is not included, which statement is true?	Anal	lysis	Thinking		
true:	Related	d SEs			
A The cost is \$9.95 less per day.			Data An	alysis	
<b>B</b> The cost is \$9.95 less.	SE Lev	el Data		State	Local
C The cost is \$9.95 more per day.	Item	State	Local	Error Type	
<b>D</b> The cost is \$9.95 more.	A/F			Procedur	al
	*B/G			Application	
	C/H			☐Conceptu☐Guessing	
	D/J				
		In	structiona	l Analysis	
				r to examples res applicatio	
	Depth of Level				evel 3 evel 4
* Correct answer (B)	Conce	pt		'	
		A 1			
A.6F		Anaiysi		sed Stando	ıras
2013 – Q14	Dual C	oding	Content	Readiness	
			Process		
Students at a school will sell hats to raise money. There are some hats left over from last year, and 20 boxes of hats will be ordered this year. When the order arrives, the total number		or PLC lysis	Stimulus		
of hats the students will have can be determined using the function $f(x) = 48x + 37$ , where $x$ represents the number of boxes ordered. If the number of hats per box changes so that			Thinking		
the situation is modeled by the function $h(x) = 24x + 37$ , then how many fewer hats will the	Related	3 SES			
students have available to sell if they still order 20 boxes?			Data An	alysis State	Local
Record your answer and fill in the bubbles on your answer document.	SE Lev	el Data		State	Local
	Item	State	Local	Error Type	
				Procedur	al
	B/G			Application	on
	C/H			☐Conceptu☐Guessind	
	D/J				
		ln:	structiona	l Analysis	

So What?	
Now What?	

☐Similar to examples (taught)
☐Requires application (learned)

Level 3 Level 4

Level 1 Level 2

Evidence of Transfer

Depth of Knowledge

Concept

\* Correct answer (480)

A.6F	Analysis of Assessed Standards				rds
	Dual Coding		Content	Readiness	
2013 – Q24			Process		
An airplane's altitude in feet during its descent for landing can be found using the function $f(x) = -300x + 30,000$ , where x represents the horizontal distance in miles from where	PLC for PLC		Stimulus		
the plane begins its descent. After new government regulations become law, the airplane's			Thinking		
descent will be modeled by the function $g(x) = -300x + 30{,}500$ . Which statement describes this change?	Related	d SEs			
E. The simplene starts its descent from an altitude 500 feet higher			Data An	alysis	
<b>F</b> The airplane starts its descent from an altitude 500 feet higher.	CE L	E Level Data		State	Local
<b>G</b> The airplane starts its descent from an altitude 500 feet lower.	SE Lev	ei Data			
H The airplane descends 500 feet per horizontal mile faster.	Item	State	Local	Error Type Procedural Application Conceptual	
J The airplane descends 500 feet per horizontal mile slower.	A/F*				
The displane descends 500 rece per nonzonear fine slower.	B/G				
	C/H			☐Guessing	ai
	D/J				
	Instructional Analysis				
	Evidence of ☐ Similar to examples (taught ☐ Requires application (learners)				
			Level		evel 3 evel 4
* Correct answer (F)	Concept				

A.6F	Analys	is of Asses	sed Standa	rds
0040 044	Dual Coding	Content	Readiness	
2013 – Q44	Dual County	Process		
The graph below shows the water level in a tank being drained at a constant rate.	PLC for PLC	Stimulus		
Tank Water Level	Analysis	Thinking		
16	Related SEs			
14		Data Ar	alysis	
$\stackrel{\frown}{=}$ $\stackrel{12}{=}$ $(1, 10)$	051 154		State	Local
E 10 (1, 15)	SE Level Data    10			
<u> </u>	Item State	Local		
(4.4)	A/F		Error Type  ☐Procedura	s.I
4	B/G		Applicatio	
2	C/H*		Conceptu	
0 1 2 3 4 5 6 7 ×	D/J		Guessing	
Time (h)		structiona	l Americaia	
		SHUCHONG	i Andiysis	
If the rate at which the tank is drained is changed to 3 inches per hour and the initial water level stays the same, how would the time it takes to empty the tank be affected?	Evidence of ☐Similar to examples (taught) ☐Requires application (learned)			(taught) n (learned)
F It would take 4 fewer hours. H It would take 2 fewer hours.	Depth of	Level		evel 3
G It would take 1.5 more hours. J It would take 2 more hours.	Knowledge	Level	2   L	evel 4
	Concept			
* Correct answer (H)				

So What?	
Now What?	



**A.6G** relate direct variation to linear functions and solve problems involving proportional change **Units:** 

A.6	G		Analysi	s of Asses	sed Stand	ards
004	4004	Dual C	odina	Content Suppo		
201	4 – Q34	Duai C	ounig	Process		
34	The mass of a substance varies directly with the volume of the substance. The volume of 100 kilograms of the substance is 80 liters. What is the volume, in liters, of 3.2 kilograms of	PLC fo	or PLC	Stimulus		
	this substance?	Ana	lysis	Thinking		
	Record your answer and fill in the bubbles on your answer document.	Relate	d SEs			
				Data An	alysis	
		SE Level Data			State	Local
				Local	Error Type	1
		A/F			□Procedu	
		B/G			Applicati	
		C/H			☐Concept ☐Guessin	
		D/J				9
			Ins	tructiona	l Analysis	
					r to example res application	
		Depth of Knowledge		☐ Level		Level 3 Level 4
* Co	prrect answer (2.56)	Conce	pt			

A.6G Analysis of Assesse					andar	ds
		Dual Cadina		Content Supporting		
2013 – Q10	Dual Coding		Process			
The value of $y$ varies directly with $x$ . Which function represents the relationship between	PLC fo	or PLC	Stimulus			
$x$ and $y$ if $y = \frac{20}{3}$ when $x = 30$ ?	Anal	lysis	Thinking			
	Related	d SEs				
$\mathbf{F}  y = 200x$			Data An	alysis		
	05.1	- L D - 1 -		Stat	e	Local
$\mathbf{G}  y = \frac{2}{9}x$	SE Level Data					
$y = \frac{1}{9}x$	Item	State	Local			
	A/F			Error 1		
$\mathbf{H}  y = \frac{110}{3} x$	B/G*			Appl		
3	C/H			Con		ıl
	D/J			□Gue	ssing	
$\mathbf{J}  y = \frac{9}{2}x$		Ins	tructiona	<b>I</b> Analy	'sis	
2	Evidence of Transfer		☐Similar to examples (tau ☐Requires application (le			
	Depth of Knowledge		Level 1		☐ Le	
* Correct answer (G)	Conce	pt				

So What?	
Now What?	



(Analy	sis I Ir	nvestigati	ina the (	Juestion
Q / III GIY	JIJ   II	1103119011		200311011

SE A.7A

RC: 4

**A.7A** analyze situations involving linear functions and formulate linear equations or inequalities to solve problems

A.7A		Analysi	s of Asses	sed Stanc	lards
	Duel C	مطامم	Content	Supporting	9
2014 – Q52	Dual Coding		Process		
<b>52</b> A tennis player broke the old record for the most matches won in a tournament by at least 2	PI C fo	or PLC	Stimulus		
matches. Which inequality can be used to find all possible values of $t$ , the number of matches the player won, in terms of $r$ , the old record?	_	lysis	Thinking		
<b>F</b> $t \le r - 2$	Relate	d SEs			
			Data An		
G $t \ge 2r$	SE Lev	el Data		State	Local
$\mathbf{H}  t \leq \frac{r}{2}$	Item	State	Local	Error Typ	e
_ 2	A/F			Procedu	
$t \ge r+2$	B/G			☐Applicat	
	C/H			Guessir	ng
	D/J*	Inc	almu alian a		
				l Analysis	(-
	Evider Transf			r to example res applicati	es (taught) on (learned)
	Depth	of	☐ Level	1 🗆	Level 3
	Knowl		Level		Level 4
* Correct answer (J)	Conce	pt			
A.7A		Analysi	s of Asses	sed Stanc	lards
				Content Supporting	
2013 – Q45	Dual C	oding	Process		
An architect is designing an office building with $n$ floors that will have an FM radio antenna	DI C f	or DL C	Stimulus		
15.85 m tall on its roof. Each floor of the building will be 3.9 m high. Which function can be used to find the total height of the building in meters, including the FM antenna?	PLC for PLC Analysis		Thinking		
	Relate	d SEs	9		
A $h(n) = 15.85n + 3.9$			Data An	alvsis	
<b>B</b> $h(n) = 3.9n + 15.85$			Daia Aii	State	Local
	SE Lev	el Data			
C $h(n) = 3.9n - 15.85$	Item	State	Local	Error Typ	^
D (a) = 19.75a	A/F			□Procedu	ıral
D $h(n) = 19.75n$	*B/G			Applica	tion
	C/H			☐Concep ☐Guessir	tual
	D/J				
		ln:	structiona	l Analysis	
	Evider Transf			r to example res applicati	es (taught) on (learned)
Depth of			Level		Level 3
* Correct answer (B)	Knowl		Level	2	Level 4
Correct answer (D)	Conce	pt			
So What?					
Nov. Made					
Now What?					

## IQ Analysis | Investigating the Question

SE A.7B

**RC: 4** 

**A.7B** investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, select a method, and solve the equations and inequalities

A.78	3	Analysis of Assessed Standards						ds
2014 044				Dual Coding		Readin	ess	
2014 – Q14			Duai C	ounig	Process			
14	A student bou	ght concert tickets online. The total cost, $c$ , in dollars, of $t$ tickets can be found tion below.		or PLC	Stimulus			
	-	c = 24.50t + 9.50	Analysis		Thinking			
			Related	d SEs				
	If the student	spent a total of \$83 on tickets, how many tickets did he buy?			Data An	olysis State		Local
	Record your a	nswer and fill in the bubbles on your answer document.	SE Lev	el Data		Stati		LUCAI
			Item A/F	State	Local	Error T		
			B/G			☐Proc ☐Appl		
			C/H			Cond	ceptua	
			D/J			□Gues	ssing	
				ln:	structiona	l Analy	sis	
			Eviden Transfe			r to exan res applic		taught) (learned)
			Depth of ☐ Level Knowledge ☐ Level				☐ Le	
* Coı	rrect answer	(3)	Concept					
			1		1			
A.78	3			Analysi	s of Asses	sed Sta	ındar	ds
			Dural C	d!::	Content	Readin	ess	
201	4 – Q26		Dual C	oaing	Process	s		
	Boston to Los	te distance in miles between Los Angeles and a commercial jet flying from Angeles can be found using the function $m=-475t+2,650$ , where $t$ is the		or PLC lysis	Stimulus			
		rs the jet has been flying. Which number of hours and minutes is closest to the that the jet has been flying if the jet is 1,500 miles from Los Angeles?	Related		Thinking			
	F 2 hours an	d 25 minutes	related	J OLS	Data An	alveis		
	<b>G</b> 8 hours an	d 44 minutes	05.1		Daia Ai	State	е	Local
	H 3 hours an	d 16 minutes	SE Lev	el Data				
				State	Local	Error T	уре	
	J 9 hours an	d 13 minutes	A/F* B/G			Proc		
			C/H			☐Appl☐Cond		
			D/J			□Gues	ssing	
				In	structiona	l Analy	sis	
		Evidence of Simila		r to exam		taught) (learned)		
		Depth	of	Level	1	Le	vel 3	
			Knowle	edge	Level	2	Le	vel 4
COI	rrect answer	(F)	Conce	pt				
Sc	o What?							
No	w What?							

A.7E	3	Analysis of Assessed Standards				ards	
					Content Readiness		
201	4 – Q37	Dual C	oding	Process			
37	Which of the following describes all the solutions to the inequality $5x + 7y \ge 22$	PLC fo	or PLC	Stimulus			
	when $y = -4$ ?	Ana	lysis	Thinking			
	<b>A</b> $x \le 10$	Relate	d SEs				
				Data An	alysis		
	<b>B</b> $x \le -10$	05.1			State	Local	
		SE Lev	el Data				
	<b>C</b> x ≥ 10	Item	State	Local	Error Turo		
		A/F			Error Type  ☐Procedural		
	<b>D</b> $x \ge -10$	B/G			Applicati		
		*C/H			□Concept	ual	
		D/J			☐Guessin	g	
		Instructional Analysis					
		Eviden	ice of	Simila	☐Similar to examples (taught) ☐Requires application (learned		
						, ,	
				Level 1 Level 2		Level 3 Level 4	
* Co	rrect answer (C)	Concept			'		
A.7E		Analysis of Assessed Standards					

A.7B Analysis of Assessed Standards						
А.7В		Andiysi	s of Asses	sea sianaa	ras	
			Content			
2013 – Q16	Dual Coding		Process			
A painter charges \$35 per hour for labor plus \$40 for a ladder rental when he paints a house.  The customer provides the paint. The total charge to paint a customer's house was \$950.	PLC fo		Stimulus			
How many hours did the painter spend painting this house?	Anal	ysis	Thinking			
2 .	Related	d SEs				
F $12\frac{2}{3}$ h			Data An	alysis		
, and the second				State	Local	
<b>G</b> 28 h	SE Level Data					
	Item	State	Local	Error Type		
<b>H</b> 23 h	A/F			Procedura	al	
	B/G			Applicatio		
J Not here	C/H			Cupacing		
	D/J*			☐Guessing		
	Instructional Analysis					
				☐Similar to examples (taught) ☐Requires application (learned		
	Depth of Knowledge		Level		evel 3 evel 4	
* Correct answer (J)		ot				

So What?	
Now What?	

A.7B			Analysi	s of Asses	sed Standa	ırds	
2013 – Q31		Dual Coding		Content	Readiness		
				Process			
Which coordinate pair	is in the solution set for $y < 1 - 6x$ ?	PLC fo		Stimulus			
	y	Anal	ysis	Thinking			
	10	Related	d SEs				
	7			Data An	alysis		
	6	SE Lev	ol Data		State	Local	
	4	3E Lev	ei Dala				
	2	Item	State	Local	Error Type		
	-10-9-8-7-6-5-4-3-2-1 1 2 3 4 5 6 7 8 9 10 X	A/F			□ Procedural		
	10-9-8-7-8-5-4-3-2-1 1 2 3 4 5 6 7 8 9 10	B/G			□ Applicatio	n	
	-3	C/H			Conceptual		
	-5	*D/J			□Guessing		
	Evidence Transfer		Instructional Analysis				
				r to examples res applicatior			
<b>A</b> (1, 0)			Depth of Knowledge			evel 3 evel 4	
<b>B</b> (1, −1)							
C (0, 1)							
D (-1, 1)		Concept					
* Correct answer (D)							

A.7B	Analysis of Assessed Standards				
			Content Readiness		i
2013 – Q52			Process		
If $y = -\frac{4}{5}x - 2$ , what is the value of x when $y = -9$ ?	PLC fo	or PLC	Stimulus		
5	Anal	lysis	Thinking		
35	Related	d SEs			
$\mathbf{F} = \frac{35}{4}$			Data An	alysis	
4	SE Level Data			State	Local
	SE Lev	ei Data			
$G - \frac{55}{4}$	Item	State	Local	Error Type	e
4	A/F			Procedu	
	B/G			□ Applicat	
н <sup>35</sup>	C/H*			Concep	
$H = \frac{35}{4}$	D/J			□Guessir	ig
		Ins	tructiona	l Analysis	
J 55 4	Eviden Transfe			es (taught) on (learned)	
	Depth of Knowledge		Level		Level 3 Level 4
* Correct answer (H)	Conce	pt		·	

So What?	
Now What?	

# IQ Analysis | Investigating the Question

SE A.7C

**RC: 4** 

**A.7C** interpret and determine the reasonableness of solutions to linear equations and inequalities

A.7C		Analysi	s of Asses	sed Stan	dards	
			Content	Supportin		
2014 – Q31	Dual C	oding	Process			
31 The measure of an obtuse angle is represented by $(9x + 27)^\circ$ . Which is not a possible value	PLC fo	or PLC	Stimulus			
for <i>x</i> ?	Ana	lysis	Thinking			
<b>A</b> 7.1	Relate	d SEs				
<b>B</b> 12.3			Data An	nalysis		
<b>c</b> 16.9	SE Lev	el Data		State	Local	
<b>D</b> 6.8	Item	State	Local	Error Ty	no.	
	A/F			Proce		
	B/G			Applic		
	C/H *D/J			☐Conce ☐Guess	ing	
	- D/J	ln	structiona	l Analysi	· · · · · · · · · · · · · · · · · · ·	
	Eviden	ce of	Simila	r to examp	les (taught) tion (learned)	
		_	1			
	Depth Knowle		Level		Level 3 Level 4	
* Correct answer (D)	Concept					
A.7C		Analysi	s of Asses	sed Stan	dards	
2013 – Q37	Dual C	oding	Content	11 0		
			Process			
The average annual rainfall for a particular city is 33.2 inches. In the first 30 weeks of this year, the city received a total of 9.7 inches of rain. If it is expected to rain between 1.5 and		or PLC lysis	Stimulus Thinking			
2.1 inches per week through the end of the year, what is a reasonable number of additional weeks needed for this city to reach its average annual rainfall?	Relate	d SFs	Hillikilig			
A 23 weeks	rtolato	. 020	Data An	alveis		
B 13 weeks	25.1		Daia Ai	State	Local	
	SE Lev	el Data				
C 9 weeks	Item	State	Local	Error Ty	ре	
D 16 weeks	A/F *B/G			☐Proced	dural	
	C/H			Conce		
	D/J			□Guess	ing	
		Ins	structiona	l Analysi	S	
	Evidence of Similar to examples (taught) Transfer Requires application (learned)					
	Depth of ☐ Lev		☐ Level	1 E	Level 3 Level 4	
* Correct answer (B)	orrect answer (B) Concept					
I	<u> </u>					
So What?						
Now What?						

**A.8A** analyze situations and formulate systems of linear equations in two unknowns to solve problems

A.8	A	Analysis of Assessed Standards				ırds
		Dual Coding		Content Supporting		
201	14 – Q6			Process		
6	A college student needs 11 classes that are worth a total of 40 credits in order to complete	PLC for PLC Analysis		Stimulus		
	her degree. The college offers both 4-credit classes and 3-credit classes. Which system of equations can be used to determine $f$ , the number of 4-credit classes the student can take to			Thinking		
	complete her degree, and $h$ , the number of 3-credit classes?	Relate	d SEs	•		
	$\mathbf{F}  f + h = 40$			Data An	alysis	
	4h + 3f = 11				State	Local
	<b>G</b> $f + h = 11$	SE Lev	el Data			
	4h + 3f = 40	Item	State	Local	Error Type	
	3. = 10	A/F			Procedura	al
	<b>H</b> $f + h = 40$	B/G			Applicatio	
	4f + 3h = 11	C/H			Conceptu	
		D/J*			☐Guessing	
	<b>J</b> $f + h = 11$	5,0	lne	tructiona	l Analysis	
	4f + 3h = 40					
		Evidence of Transfer			r to examples res applicatior	
		Depth of Knowledge		Level		evel 3 evel 4
* Co	orrect answer (J)	Conce	pt			

A.8A	Analysis of Assessed Standards				
		Content		Supporting	
2013 – Q12	Dual C	oding	Process		
There are 9 books stacked on a shelf. The thickness of each book is either 1 inch or 2 inches.  The height of the stack of 9 books is 14 inches. Which system of equations can be used to	PLC for PLC		Stimulus		
determine $x$ , the number of 1-inch-thick books in the stack, and $y$ , the number of	Anal	lysis	Thinking		
2-inch-thick books?	Related	d SEs			
F  x + y = 14			Data An	alysis	
2x + y = 9	CE Law	al Data		State	Local
	SE Level Data				
G	Item	State	Local	Error Type	
x+2y=9	A/F			Procedur	al
H x + y = 9	B/G			□ Application	on
x + 2y = 14	C/H*			Conceptu	
x + 2y = 14	D/J			☐Guessing	
y = x + y = 9		Ins	tructiona	l Analysis	
2x + y = 14	Eviden Transfe		☐Similar to examples (taug ☐Requires application (lear		
	Depth of Knowledge		Level		evel 3 evel 4
* Correct answer (H)	Conce	pt		,	

So What?	
Now What?	

(Analy	sis I Ir	nvestigati	ina the (	Juestion
Q / III GIY	JIJ   II	1103119011		200311011

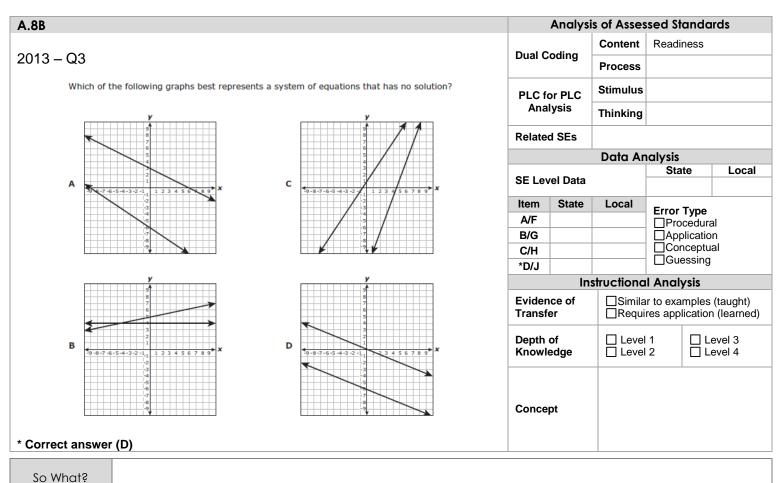
SE A.8B

RC: 4

**A.8B** solve systems of linear equations using concrete models, graphs, tables, and algebraic methods

A.8B		Analysis of Assessed Standards				
				Content	Readiness	
2014 – Q11		Dual C	oding	Process		
<b>11</b> What i	s the value of $x$ in the solution to the system of equations below?	PLC for PLC		Stimulus		
	15x - 12y = 13	Anal	lysis	Thinking		
	30x + 9y = 4	Related	d SEs			
				Data An	alysis	
A -1	1.7 3	SE Lev	el Data		State	Local
		Item	State	Local	Error Type	
<b>B</b> $\frac{1}{3}$		A/F			□Procedur	
			*B/G		☐Application	
<b>c</b> –	2	C/H D/J			Guessing	
	3	Dis	In	structiona	l Analysis	
		Eviden		T	r to examples	(taught)
D $\frac{1}{6}$		Transfe		Requi	res applicatio	n (learned)
		Depth (		☐ Level		evel 3 evel 4
* Correct answer	(B)	Conce	pt			
A.8B			Analysi	s of Asses	sed Stando	ırds
2244 222		Dual C	adina	Content	Readiness	
2014 – Q20		Dual Coding		Process		
20 There are 156	laptops and desktop computers in a lab. There are 8 more laptops than desktop nat is the total number of laptops in the lab?	PLC for PLC Analysis		Stimulus		
				Thinking		
Record your ar	nswer and fill in the bubbles on your answer document.	Related	d SEs			
				Data An		
		SE Lev	el Data		State	Local
		Item	State	Local	Error Type	
		A/F			Procedur	al
		B/G			☐Applicatio	on Iol
		C/H D/J			Guessing	lai 
		DIS	Ins	structiona	l Analysis	
		Eviden			r to examples	(taught)
		Transfe			res applicatio	
		Depth of Knowledge		Level	1	evel 3 evel 4
Correct answer	* Correct answer (82)		pt			
-						
So What?						
Now What?						

A.8B	Analysi	s of Asses	sed Standa	rds
2014 – Q49	Dual Coding	Content Process	Readiness	143
49 A candy company sells cases of chocolate bars. The company has fixed costs of \$30,000, and each case of chocolate bars costs an additional \$5 to make. The company sells each case for \$10. The graph of a system of linear equations representing this company's costs and revenue for manufacturing and selling x cases of chocolate bars is shown below.		Stimulus Thinking		
Sales of Chocolate Bars	Related SEs	D 1 1		
(spuggg 40	SE Level Data	Data An	State	Local
(\$\frac{1}{5}\text{Duesnoy}{\text{10}}\text{ Costs} \\ \text{Revenue} \\ \text{10}\text{ Costs} \\ \text{Revenue} \\ \text{10}\text{ Costs} \\ \te	Item State A/F *B/G C/H D/J	Local	Error Type  Procedura  Applicatio  Conceptua  Guessing	n
Number of Cases (in thousands)	Instructional Analysis			
How many cases of chocolate bars will this company need to sell in order for costs and revenue to be equal?	Evidence of Transfer	☐Similar to examples (t☐Requires application (		
A 3,500 B 6,000	Depth of Knowledge			evel 3 evel 4
<b>c</b> 35,000				
D 60,000	Concept			
* Correct answer (B)				



Now What?

A.8B	Analysis of Assessed Standards				ırds
2010 200	Dual C	odina	Content	Readiness	
2013 – Q26	Dual C	oung	Process		
What is the value of $x$ in the solution to the system of equations below?	PLC for PLC Stimulu		Stimulus		
6x + 3y = 13	Anal	ysis	Thinking		
3x - y = 4	Related	d SEs			
			Data An	alysis	
F 1	05.1	SE Level Data		State	Local
	SE Lev	ei Data			
5	Item	State	Local	Error Type	
$\frac{5}{3}$	A/F			Procedur	al
3	B/G*			Application	n
R	C/H			☐Conceptu ☐Guessing	
$H = \frac{8}{3}$	D/J				
3		Ins	tructiona	l Analysis	
$\frac{7}{3}$	Evidence of Similar to examples Transfer Requires application				
	Depth Knowle		Level	1	evel 3 evel 4
* Correct answer (G)	Conce	ot			

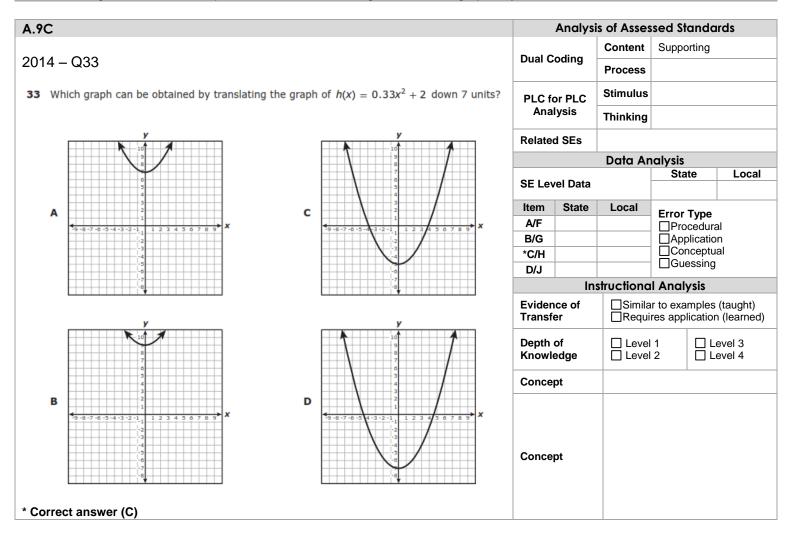
A.8	В	Analysis of Assessed Standards						
					Content Readiness			
201	3 – Q40	Dual C	oding	Process				
	high school band held a bake sale. The number of cupcakes sold was four more than twice	PLC for PLC		PLC for PLC		Stimulus		
	e number of cookies sold. The band sold a total of 52 cupcakes and cookies. How many ocakes were sold?	Anal	lysis	Thinking				
F	28	Related	d SEs					
G	16			Data An	alysis			
G	16	SE Level Data			State	Local		
н	36							
1	24	Item	State	Local	Error Type			
	27	A/F			□Procedur	al		
		B/G			□ Application			
		C/H*			Conceptu			
		D/J			☐Guessing			
		Instructional Analysis						
					Similar to examples Requires application			
	Depth of Knowledge		Level		evel 3 evel 4			
* Correct answer (H)		Conce	pt					

So What?	
Now What?	

**A.8C** interpret and determine the reasonableness of solutions to systems of linear equations

A.8C		Analysi	s of Asses	sed Standa	rde	
A.oc		Allulysi	is of Assessed Standards		ilus	
0044 040	Dual	Coding	Content	Supporting		
2014 – Q46	Duai	oounig	Process			
			Ctimulus			
46 A boy has 380 prize tickets he wants to exchange for action figures at a prize booth this prize booth 5 tickets can be exchanged for a large action figure, and 7 tickets of	an ha	for PLC	Stimulus			
exchanged for 2 small action figures. The boy wants 4 times as many small action figures.		alysis	Thinking			
large action figures. Based on this information, can the boy get 80 small action figu	ires?	ed SEs				
F. No. harrons he would not have accord tickets for 20 laws action figures.	Relat	eu ses				
<b>F</b> No, because he would not have enough tickets for 20 large action figures			Data An		Land	
<b>G</b> Yes, because he would still have enough tickets for 320 large action figures	SE Lo	evel Data		State	Local	
<b>H</b> No, because he would not have enough tickets for 320 large action figures	Item	State	Local	F T		
J Yes, because he would still have enough tickets for 20 large action figures	A/F			Error Type	اد	
	B/G			Applicatio		
	C/H			□Conceptu	al	
	D/J*			☐Guessing		
		ln	structiona	l Analysis		
	Evide	nce of	□Simila	r to examples	(taught)	
	Trans	fer			application (learned)	
	Depti	n of	☐ Level	1   🗆 🗠	evel 3	
		ledge	Level	2   🗖 L	evel 4	
* Correct answer (J)	Cond	ont				
	Conc	ehr				
A.8C		Analysi	s of Asses	sed Standa	rds	
			Content	Supporting		
2013 – Q23	Dual	Coding	Process			
The sophomore class needs a combined total of 216 medium and large T-shirts for	field day		Stimulus			
· · · · · · · · · · · · · · · · · · ·	needed PLC	for PLC	Sumuus			
The number of medium T-shirts needed is three times the number of large T-shirts needed.  Based on this information, would it be reasonable for the sophomore class to order 72 large		alysis	Thinking			
T-shirts and 144 medium T-shirts?	Relat	Related SEs				
A No, because the number of medium T-shirts is not 3 times the number of large			D 1 1			
T-shirts			Data An	State	Local	
	SE Lo	evel Data		State	Local	
B No, because the number of large T-shirts is not 3 times the number of medium	Item	State	Local	Error Time		
T-shirts	*A/F			Error Type  ☐Procedura	al	
	B/G			□ Applicatio	n	
C Yes, because the total number of T-shirts is 216	C/H			Conceptu	al	
	D/J			☐Guessing		
<b>D</b> Yes, because the number of large T-shirts is $\frac{1}{3}$ of the total number of T-shirts		In	structiona	l Analysis		
	Evide Trans	ence of efer		r to examples res applicatior		
			<u> </u>			
	Depti		Level		evel 3	
		ledge	Level	2	evel 4	
* Correct answer (A)		ept				
		-				
0.144.19						
So What?						
Now What?						

**A.9C** investigate, describe, and predict the effects of changes in c on the graph of  $y = ax^2 + c$ 



So What?	
Now What?	

### A.9D analyze graphs of quadratic functions and draw conclusions

Units:

Concept

A.9D		Analysi	s of Asses	sed Standa	rds
			Dual Coding Content Readiness		
2014 – Q21	Duai C	oaing	Process		
21 Which statement about the quadratic functions below is false?	PLC for PLC Stimulus				
	Anal	lysis	Thinking		
$f(x) = -\frac{3}{4}x^2 + 6$	Related	d SEs			
$q(x) = -2x^2 - 5$			Data An	alysis	
	SE Lev	el Data		State	Local
$h(x) = \frac{1}{4}x^2 + 1$					
4	Item	State	Local	Error Type	
	*A/F			□Procedura	
A The graphs of two of these functions have a minimum point.	B/G			Applicatio	
<b>B</b> The graphs of all these functions have the same axis of symmetry.	C/H			☐Conceptu ☐Guessing	
	D/J				
<b>C</b> The graphs of two of these functions do not cross the <i>x</i> -axis.	Instructional Analysis				
<b>D</b> The graphs of all these functions have different <i>y</i> -intercepts.	Evidence of ☐ Similar to examples (taught) ☐ Requires application (learned)				` ' '
	Depth Knowle		Level		evel 3 evel 4
* Correct answer (A)	Conce	nt		ı	

A.9D		Analysi	s of Asses	sed Stando	ards
			Content	Readiness	
2014 – Q43	Dual C	oaing	Process		
43 An architecture student is drawing a graph of an arch. As shown below, the arch has the shape of a parabola that begins at the origin and has a vertex at (4.6, 12.2).	PLC fo	r PLC	Stimulus		
Arch Drawing	Anal	ysis	Thinking		
14	Related	l SEs			
13			Data An	alysis	
11	SE Lev	-I D-1-		State	Local
10	SE Lev	ei Data			
9 /	Item	State	Local	Error Type	
7	A/F			Procedu	
6 5	*B/G			Application Conceptual	
3	C/H				
3	D/J			☐Guessing	
2	Instructional Analysis				
0 1 2 3 4 5 6 7 8 9 10 11 12 x	Eviden Transfe			r to examples res applicatio	
Other than the origin, at which point will the graph intersect the x-axis?	Donth		☐ Level	4 🗆	_evel 3
<b>A</b> (12.2, 0)	Depth of Knowledge		Level		_evel 3 _evel 4
<b>B</b> (9.2, 0)					
<b>C</b> (4.6, 0)					
<b>D</b> (10.6, 0)	Conce	ot			
* Correct answer (B)					
0 11/1 10					
So What?					

Now What?

A.9D	Analysis of Assessed Standards				ds					
							Content	Readine	ess	
2013 – Q2	Dual C	Dual Coding								
What is the vertex of the graph of the quadratic function $f(x) = x^2 + 6x + 10$ ?		or PLC	Stimulus							
	Anal	lysis	Thinking							
F (3, -1)	Related	d SEs								
G (-3, -1)			Data An	ata Analysis						
<b>3</b> ( 3, 1)	SE Lev	el Data		State		Local				
H (-3, 1)		0.1								
	Item State		Error Type							
J (3, 1)	A/F B/G			Proce						
	C/H*			☐Applic☐Conce						
	D/J			Gues						
	Dis	Ins	tructiona	nal Analysis						
	Evidon					ought)				
				]Similar to examples (taug ]Requires application (lea						
	Depth Knowle		Level		☐ Lev					
* Correct answer (H)	Conce	pt								
	I									

A.9D And			
A.7D Alld	lysis of Asses	ssed Stando	ards
2013 – O41 Dual Coding	Content	Readiness	
2013 – Q41 Dual Coding	Process		
Two points on the graph of a quadratic function are shown on the grid below.	C Stimulus		
Analysis	Thinking		
Related SE	<b>s</b>		
	Data Ar	nalysis	
SE Level Da	uto.	State	Local
SE Level Da	ııa		
ltem Sta	te Local	Error Type	
*A/F		Procedur	
B/G		□ Application	on
-3 - C/H		Conceptual	
D/J		Guessing	
-6	Instruction	I Analysis	
Evidence of Transfer		ar to examples ires applicatio	s (taught) n (learned)
What is the equation for the axis of symmetry of the graph of this function?  Depth of Knowledge	☐ Leve		_evel 3 _evel 4
<b>A</b> $x = -3$			
<b>B</b> $y = -3$			
C $x = -5$			
D $y = -5$			
* Correct answer (A)			

So What?	
Now What?	

**A.10A** solve quadratic equations using concrete models, tables, graphs, and algebraic methods **Units:** 

A.10A				Analysi	s of Asses	sed Stan	ndard	ls
0044 040			Dual C	odina	Content	Readines	ss	
2014 – Q13			Duai	oung	Process			
13 The table of values for quadratic func	ction g is s	shown below.	PLC f	or PLC	Stimulus			
		7(1)	Ana	lysis	Thinking			
	<i>x</i> −3	g(x) 48	Relate	d SEs				
	-2	30			Data An	alysis		
	-1	16				State		Local
	0	6	SE Lev	el Data				
	2	-2	Item	State	Local			
	3	0	A/F			Error Ty ☐Proce		
	4	6	*B/G			Applic		
	6	30	C/H			☐Conce	eptual	
			D/J			□Guess	sing	
If 1 is a solution to $g(x) = 0$ , what is	the othe	er solution?		ln	structiona	l Analysi	is	
A -1			Evider Transf		□Simila □Requi	r to examp res applica	oles (ta ation (l	aught) learned)
<b>B</b> 3			Depth Knowl		☐ Level	1 [	Lev	el 3
<b>C</b> 6			KIIOWI					OI -T
<b>D</b> –2			Conce	pt				
* Correct answer (B)								

A.10A		Analysi	s of Asses	sed Standa	rds		
			Content Readiness				
2014 – Q24	Dual C	oaing	Process				
<b>24</b> What are the solutions to the equation $x^2 - 4x = -1$ ?	PLC for PLC		PLC for PLC St		Stimulus		
	Anal	lysis	Thinking				
$\mathbf{F}  x = \frac{-4 \pm \sqrt{20}}{2}$	Related	d SEs					
	Data Analysis						
<b>G</b> $x = \frac{4 \pm \sqrt{12}}{2}$				State	Local		
$\mathbf{G}  \mathbf{X} = \frac{\mathbf{X} - \mathbf{X}}{2}$	SE Lev	ei Data					
	Item	State	Local	Error Type			
<b>H</b> $x = \frac{-4 \pm \sqrt{12}}{2}$	A/F			□Procedura	ıl		
2	B/G*			Application			
$4 + \sqrt{20}$	C/H			☐Conceptua☐Guessing	al		
<b>J</b> $x = \frac{4 \pm \sqrt{20}}{2}$	D/J						
2		Ins	Instructional Analysis				
	Evidence of ☐ Similar to examples (taught) ☐ Requires application (learned)						
	Depth of Level 1 Knowledge Level 2			evel 3 evel 4			
* Correct answer (G)	Conce	pt					

So What?	
Now What?	

A.10A	Analysi	Analysis of Assessed Standards			
	Dual Coding	Content Readiness			
2014 – Q40	Dual Coding	Process			
40 Which statement about the quadratic equation below is true?	PLC for PLC	Stimulus			
	Analysis	Thinking			
$-4.5x^2 + 72 = 0$	Related SEs				
		Data An	alysis		
<b>F</b> The equation has $x = 4$ as its only solution.	051 154		State	Local	
	SE Level Data				
<b>G</b> The equation has no real solutions.	Item State	Local	Error Type		
H. The equation has a sufficient to the entry solutions	A/F		Procedura	al	
<b>H</b> The equation has $x = 4$ and $x = -4$ as its only solutions.	B/G		Applicatio		
The counties have a left-the country of actualism	C/H*		Conceptu		
<b>J</b> The equation has an infinite number of solutions.	D/J		☐Guessing		
	Ins	structiona	l Analysis		
	Evidence of Transfer				
	Depth of Knowledge	Level		evel 3 evel 4	
* Correct answer (H)	Concept				

				• •	1.01	
A.10A		Analysis of Assessed Standards				
2010 0	_			Content	Content Readiness	
2013 – Q	5	Dual Coding		Process		
,	What is the solution set for the quadratic equation $x^2 - 16 = 0$ ?	PLC for PLC		Stimulus		
		Anal	ysis	Thinking		
	A {4}	Related	d SEs			
	3 {-4, 4}	Data Analysis				
					State	Local
	{256}	SE Lev	el Data			
	<b>)</b> {-256, 256}	Item	State	Local Error Type		
		A/F			□Procedura	ıl
		*B/G			Application	
		C/H			Conceptu	al
		D/J			☐Guessing	
		Instructional Analysis				
		Evidence of Similar to examples (taught)				
		Transfer ☐ Requires application (learned			(learned)	
		Depth of		☐ Level	1 🗆	evel 3
		Knowledge		Level		evel 4
* Correct a	swer (B)	Conce	ot			

So What?	
Now What?	

#### **Analysis of Assessed Standards** A.10A Content Readiness **Dual Coding** 2013 - Q28 **Process** Stimulus The function $y = x^2 + x - 6$ is graphed below. PLC for PLC **Analysis Thinking Related SEs Data Analysis** State Local **SE Level Data** Item State Local **Error Type** A/F Procedural Application Conceptual Guessing B/G\* C/H D/J **Instructional Analysis** Evidence of ☐Similar to examples (taught) ☐Requires application (learned) Transfer Level 1 Level 2 Depth of Level 3 What are the values of x when $x^2 + x - 6 = -4$ ? Level 4 Knowledge **F** x = -4 and x = 6x = -2 and x = 1x = -3 and x = 2Concept x = -5 and x = -6\* Correct answer (G)

So What?	
Now What?	

A.10A				Analysi	s of Asses	sed Stand	ards
		Build	Dual Coding		Readiness		
2013 – Q34			Duai C	oaing	Process		
A table of values for the quadratic fund	A table of values for the quadratic function $f$ is shown below.		1 = 0	PLC for PLC		Stimulus	
-			Ana	Analysis Thin			
	X	f(x)	Relate	d SEs			
	-8	-2.75			Data An	alvsis	
L	-7	0			2 4.4.7	State	Local
L	-6	2.25	SE Le	vel Data			
L	-5	4	Item	State	Local	Errar Tura	
	-4	5.25	A/F			Error Type  ☐Procedu	
[	-3	6	B/G			Applicat	
Ī	-2	6.25	C/H			Concept	
į.	-1	6	D/J			□Guessin	g
ŀ	0	5.25		Ins	tructiona	l Analysis	
ŀ	1	4	Evider Transf			r to example res application	es (taught) on (learned)
If 3 is one solution to $f(x) = 0$ , what is	s the va	lue of t	other solution?  Depth Knowl		Level		Level 3 Level 4
Record your answer and fill in the bubbles on your answer document.		wer document.					
			Conce	ept			
* Correct answer (-7)							
			·				

So What?	
Now What?	

# IQ Analysis | Investigating the Question

**SE A.10B** 

**RC:** 5

**A.10B** make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function

A.10B		Analysi	of Asses	sed Stand	ards	
			Content Supporting			
2014 – Q5	Dual C	oaing	Process			
<b>5</b> The graph of quadratic function $g$ is shown below.	PLC fo	-	Stimulus			
y A A	Anal	ysis	Thinking			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Related	d SEs				
			Data An	alysis		
	<b>05.</b>			State	Local	
	SE Level Data					
	Item	State	Local	Error Type		
6	A/F			□Procedu		
-7	B/G			Applicat		
8	C/H			☐Concept ☐Guessin		
	*D/J				9 	
Based on the graph, between which two values of $x$ is a zero of $g$ located?		Instructional Analysis				
A −9 and −8	Eviden Transfe		□Simila □Requi	r to example res application	s (taught) on (learned)	
<b>B</b> 1 and 2						
<b>C</b> −7 and −5	Depth (		Level		Level 3 Level 4	
D 4 and 5						
* Correct answer (D)	Conce	ot				

A.10B Analysis of Assessed Standards					<b>c</b>	
A.TOB			Content	Supporting		
2013 – Q46		Dual Coding				
What are the x-intercepts of the graph of the quadratic function $f(x) = 5x^2 + 4x - 1$ ?	PLC fo	or PLC	Stimulus			
	Analysis		Thinking			
F $\frac{1}{5}$ and $-1$	Related	d SEs				
			Data An	alysis		
$G = \frac{1}{2}$ and 1	$\frac{1}{5}$ and 1 SE Level Data		Stat			Local
5						
	Item	State	Local	Frror Ty	Error Type	
H 0 and -1	A/F*			□Proce		
	B/G			Applic		
2 2	C/H			Conce		
$\frac{3}{5} - \frac{2}{5}$ and $\frac{12}{5}$	D/J			□Guess	sing	
	Inst		nstructional Analysis			
	Evidence of Transfer		☐Similar to examples (ta ☐Requires application (le			
	Depth of Knowledge		Level 1 Level 2 Level 2		_ Lev _ Lev	
* Correct answer (F)		ot		·		

So What?	
Now What?	

IQ Analy	vsis I	Investigatin	a the	Question
i 🔾 / ti i Gi y	313	ii i v osiigaiii i	9 11 10	QUUSIIUII

**SE A.11A** 

RC: 5

**A.11A** use patterns to generate the laws of exponents and apply them in problem-solving situations

A.11A					Analysi	s of Asses	sed Stando	ards .
		Dual Cadina		Content Supporting				
2014 – Q50		Dual Coding		Process				
			<b>7</b> <sup>a</sup> • <b>7</b> <sup>b</sup>	PLC for PLC		Stimulus		
50	50 Which expression is equivalent to $\frac{Z^a \cdot Z^b}{Z^c}$ ? PLC for PL Analysis		lysis	Thinking				
			2	Related SEs				
	_	-(a-b-c)				Data An	alvsis	
	F	$Z^{(a-b-c)}$					State	Local
	_	$Z^{(a-b+c)}$		SE Level Data				
	G	Z		Item	State	Local	Error Type	
				A/F			Procedur	al
	н	$Z^{(a+b-c)}$ $Z^{(a+b+c)}$		B/G			Application	
				C/H*			Conceptu	
	J	$Z^{(a+b+c)}$		D/J			☐Guessing	
			Instructional Analysis					
				Evider Transf			r to examples res application	
				Depth Knowl		Level		evel 3 evel 4
* Correct answer (H	l)			Conce	pt		I	

A.11A			Analysi	s of Asses	sed Stand	ards	
0040 054		Duel Cadina		Content Supporting			
2013 – Q51		Dual Coding		Process			
	Which expression is equivalent to $12x^6y^{-4}z^2$	PLC for PLC Analysis Related SEs		Stimulus			
	Which expression is equivalent to $\frac{12x^6y^{-4}z^2}{3x^2y^{-6}z^3}$ ?			Thinking			
	08-5						
	$A = \frac{9x^8z^5}{y^{-10}}$			Data Ar	alysis		
	y <sup>-10</sup>				State	Local	
	SE Level Data		el Data				
	$B = \frac{4x^8z^5}{y^{-10}}$	Item	State	Local	Error Type		
	y <sup>-10</sup>	A/F			Procedu		
		B/G			Applicat		
	$-9x^4y^2$	C/H			Concep		
	$c \frac{9x^4y^2}{z}$	*D/J			□Guessir	<sub>i</sub> g	
	_	Instructional Analysis					
	$D = \frac{4x^4y^2}{z}$	Eviden Transf			r to example res applicati	es (taught) on (learned)	
		Depth Knowle		☐ Level		Level 3 Level 4	
* Correct answer (D)		Conce	pt		·		

So What?	
Now What?	



and d, the distance of the applied force from the pivot point?

A.11B analyze data and represent situations involving inverse variation using concrete models, tables, graphs, or algebraic methods

Units:

	A.11B	Analysi	is of Asses	sed Standards
			Content	Supporting
	2014 – Q18		Process	
	18 A farmer uses a lever to move a large rock. The force required to move the rock varies	PLC for PLC	Stimulus	
	inversely with the distance from the pivot point to the point the force is applied. A force of 50 pounds applied to the lever 36 inches from the pivot point of the lever will move the rock.	Analysis	Thinking	

F d.	Pivot	Pagis
		Rock

Which function models the relationship between F, the amount of force applied to the lever,

_	d		F		
•	u	_	1,800		

**G** 
$$d = \frac{86}{F}$$

$$F = \frac{1,800}{d}$$

**J** 
$$F = \frac{d}{86}$$

*	Correct	anewor	

Analysis		- Cumanao				
		Thinking				
Relate	d SEs					
Data Analysis						
SE Lev	el Data		Sta	te	Local	
Item	State	Local	Error Type Procedural Application			
A/F						
B/G						
C/H*			☐Conceptual ☐Guessing			
D/J						
Instructional Analysis						
			Similar to examples (taught) Requires application (learned)			
Depth of Knowledge			Level 1 Level 2		Level 3	
			·			

Concept

So What?	
Now What?	

IQ Analysis   Investigating the Question			SE		RC:			
			Units:					
				Analysi	s of Asses	sed Stand	dards	
					Content			
		Dual Coding		oding	D			
				Process				
			PLC fo	or PLC	Stimulus			
			PLC for PLC Analysis		Thinking			
		-			Tillikilig			
			Relate	d SEs				
					Data An			
			SE Lev	el Data		State	Local	
			Item	State	Local	Error Typ	е	
		-	A/F			Proced	ural	
		_	B/G C/H			☐Applica☐Concep	ition otual	
			D/J			□Guessi	ng	
			_,,	ln.	structiona	l Analysis		
			Eviden					
			Transf		☐Similar to examples (taught)☐Requires application (learned)			
		-						
* Correct answer			Depth Knowle	of odge	Level	1	Level 3 Level 4	
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			SE Lev	el Data		State	Local	
			Item	State	Local	Error Typ	е	
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		-	C/H			☐ Concep		
			D/J			□Guessi	ng	
				ln:	structiona	ıl Analysis		
						r to exampl		
			Transf		Requi	res applicat	ion (learned)	
			David (				1110	
* Correct answer			Depth of Knowledge		Level	Level 1 Level 3 Level 4		
		-						
			Conce	pt				
				Analysi	s of Asses	sed Stand	dards	
0 1111 10								
So What?								
Now What?								